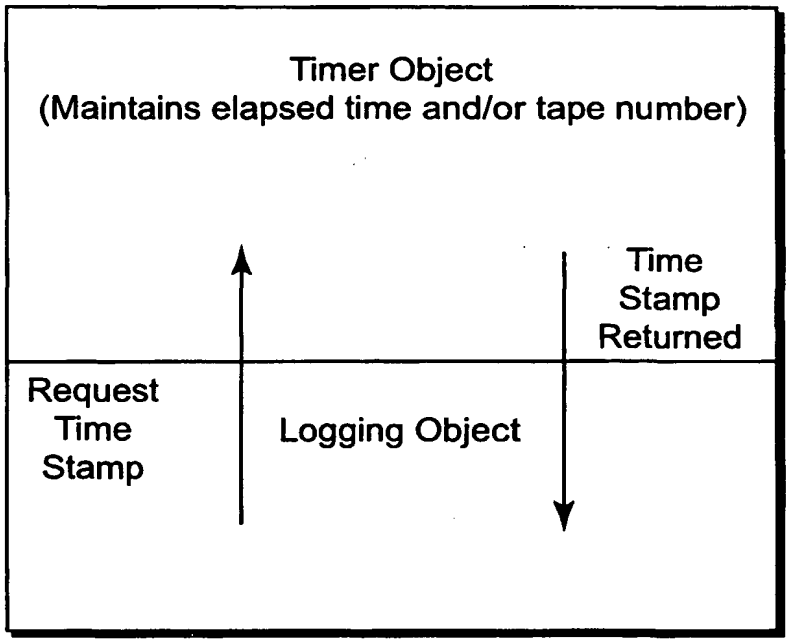


Fig.1

TEAM 1	TEAM 2	EVENT
Player 1		
	Player A	2-point
Player 2		
	Player B	3-point
Player 3		
	Player C	Foul
Player 4		
	Player D	Free Throw
Player 5		
	Player E	———
———	———	

Fig.2

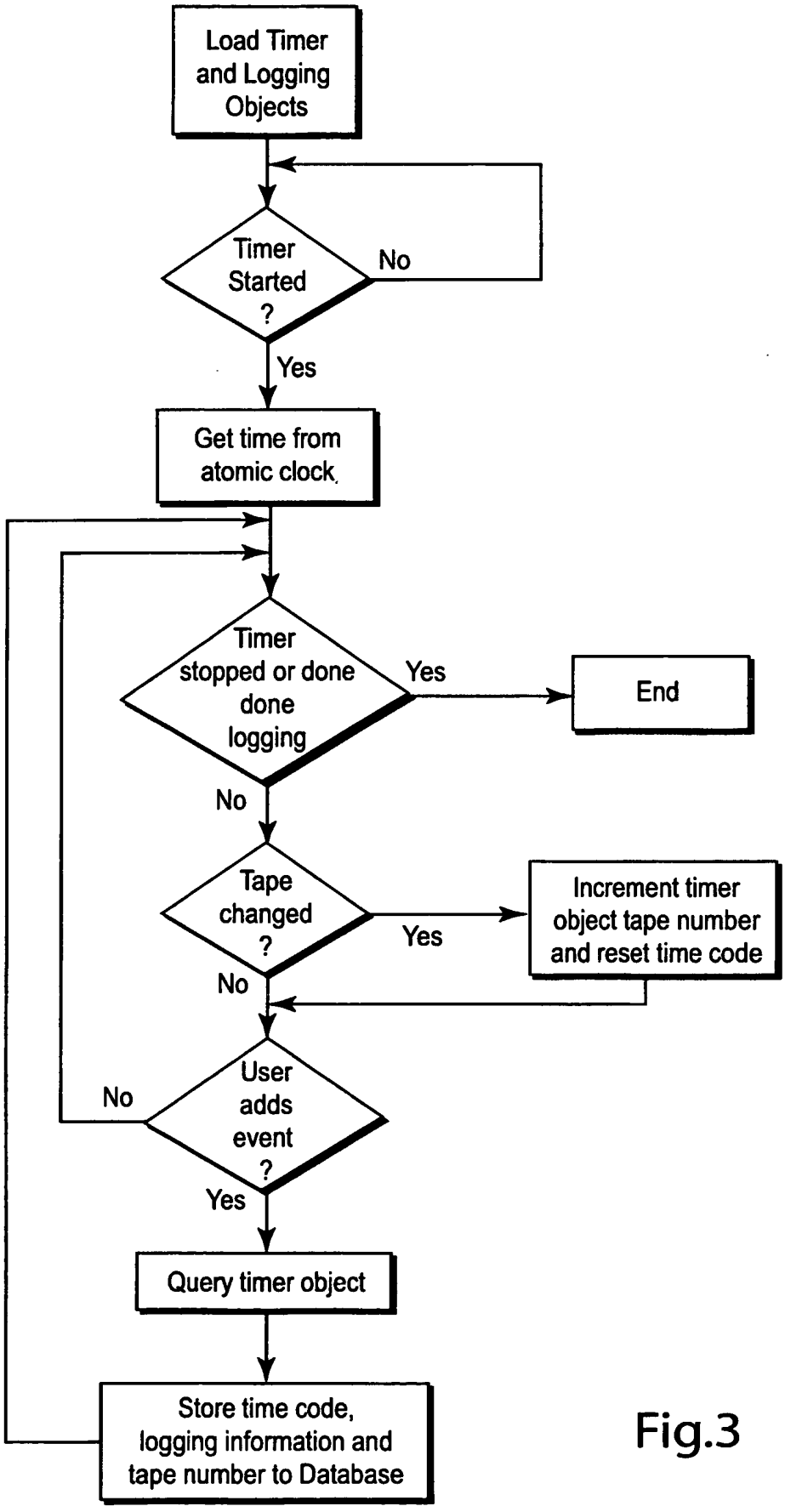

Load Timer and Logging Objects
Timer Started ?
No
Yes
Get time from atomic clock
Timer stopped or done done logging
Yes
End
No
Tape changed ?
Yes
Increment timer object tape number and reset time code
No
User adds event ?
No
Yes
Query timer object
Store time code, logging information and tape number to Database

Fig.3

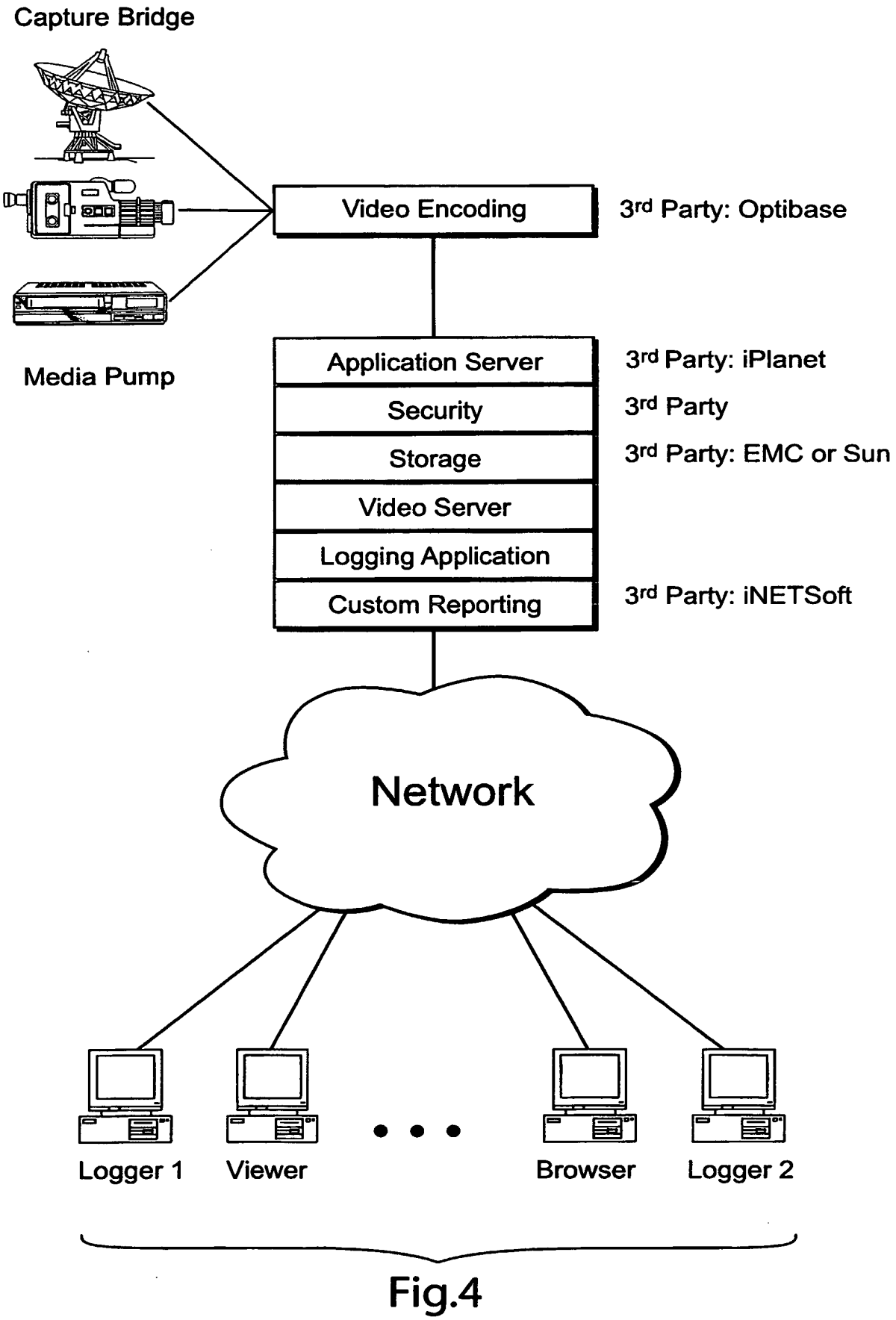

Capture Bridge
Media Pump
Video Encoding
3rd Party: Optibase
Application Server
Security
Storage
Video Server
Logging Application
Custom Reporting
3rd Party: iPlanet
3rd Party
3rd Party: EMC or Sun
3rd Party: iNETSoft
Network
Logger 1
Viewer
Browser
Logger 2

Fig.4

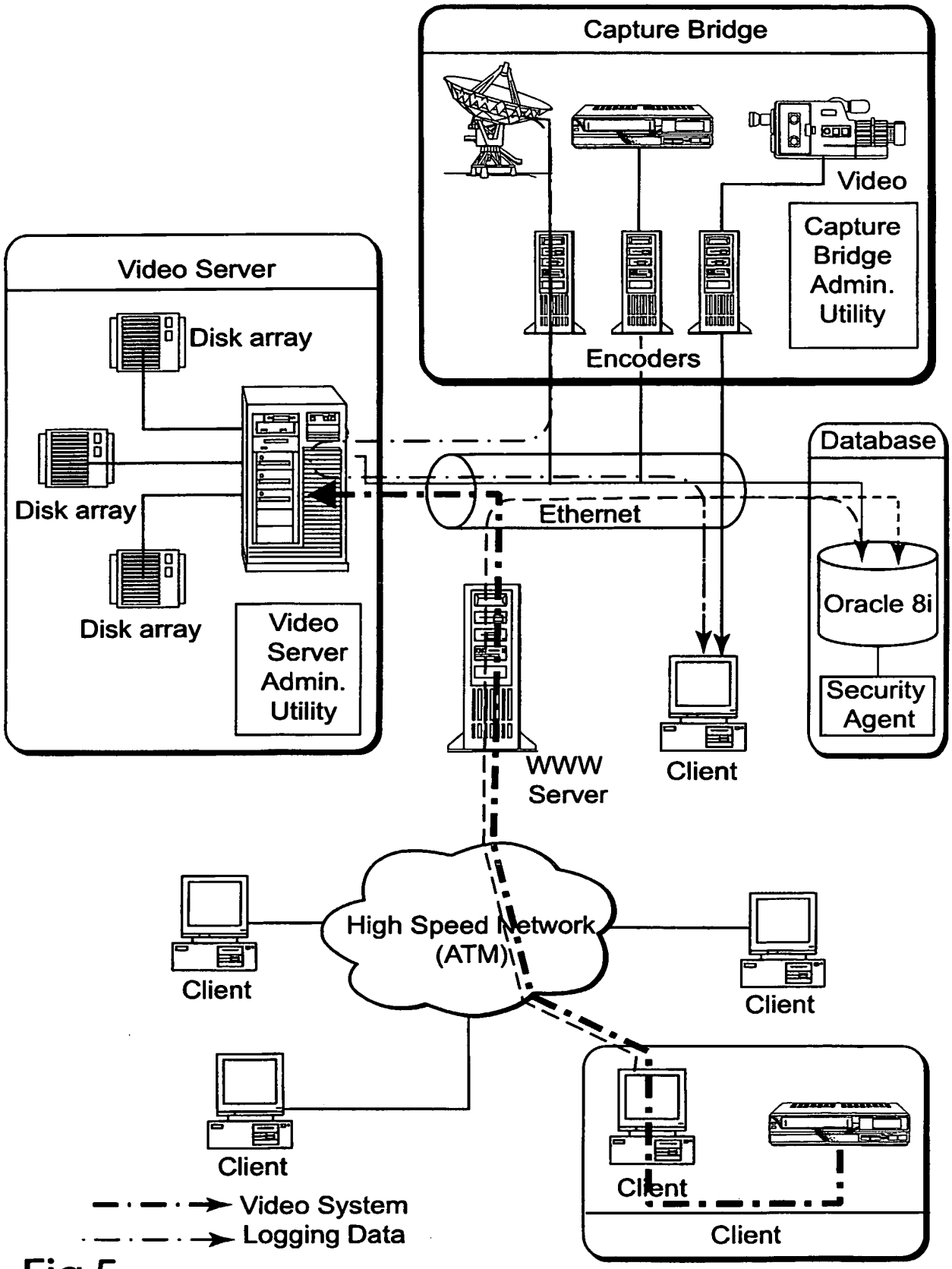

Capture Bridge
Video
Capture Bridge Admin. Utility
Encoders
Video Server
Disk array
Disk array
Disk array
Video Server Admin. Utility
Ethernet
Database
Oracle 8i
Security Agent
WWW Server
Client
High Speed Network (ATM)
Client
Client
Client
Client
Client
Video System
Logging Data

Fig.5

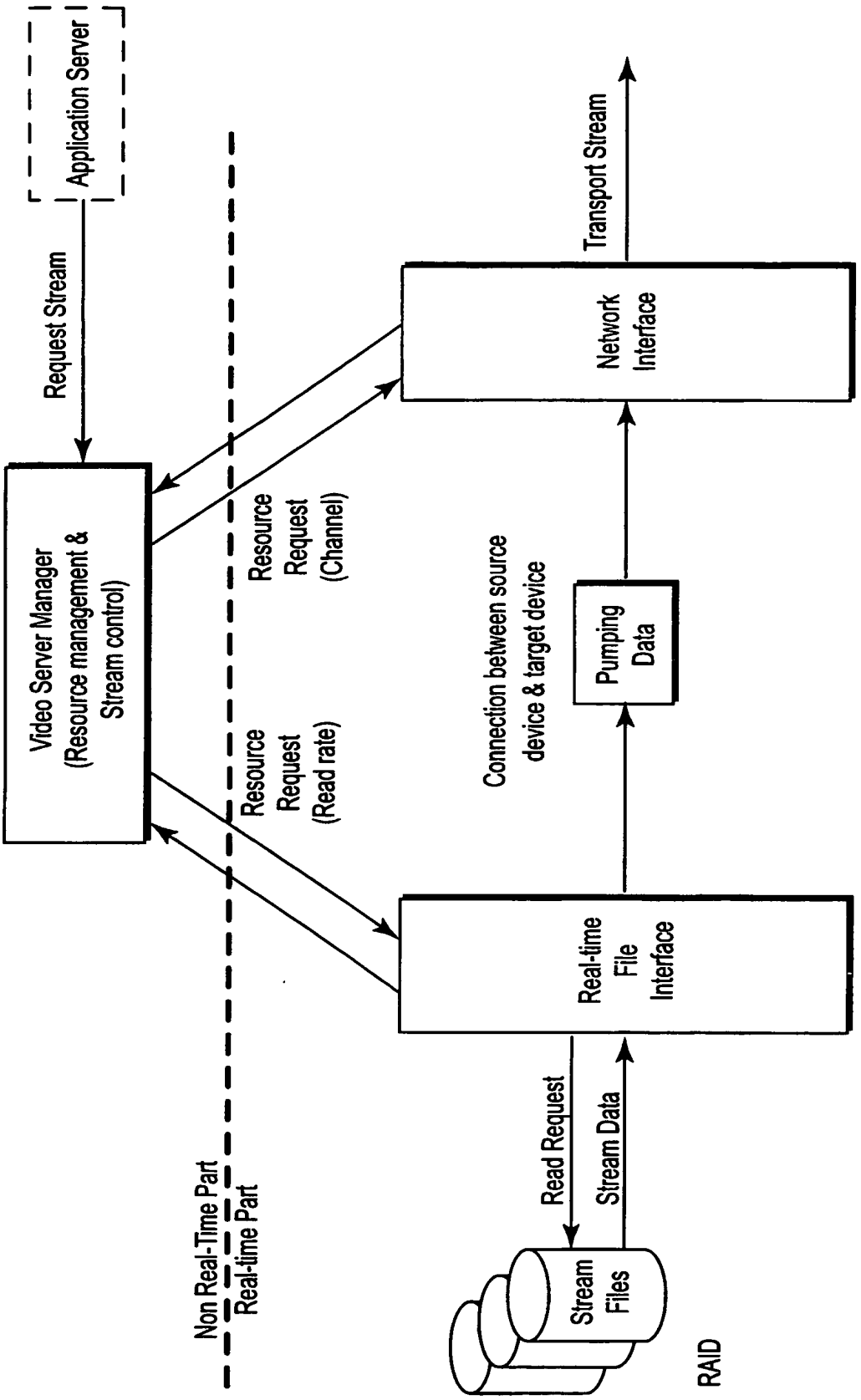


Fig.6 The video Server Architecture

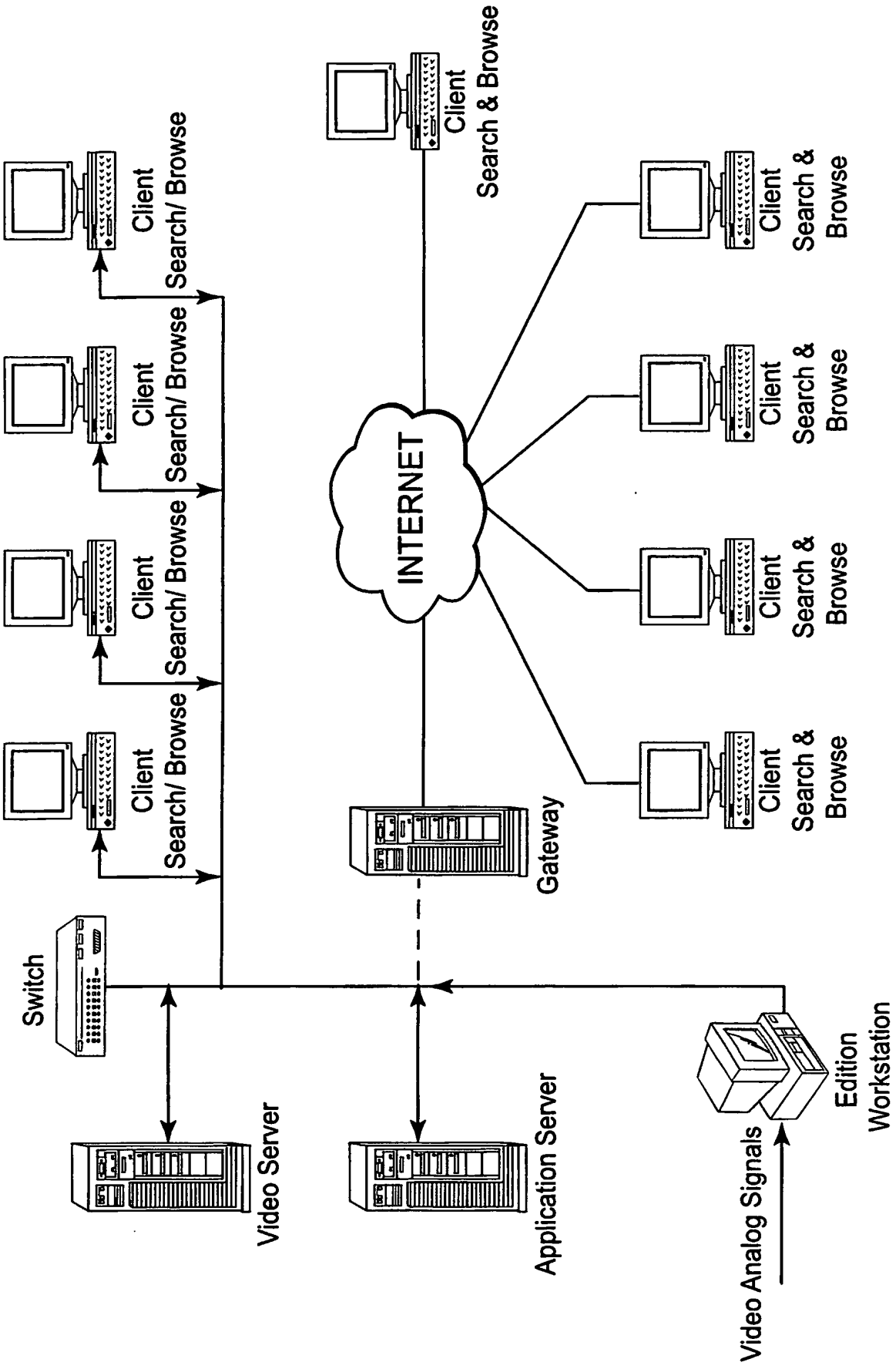


Fig.7a The video content management system architecture

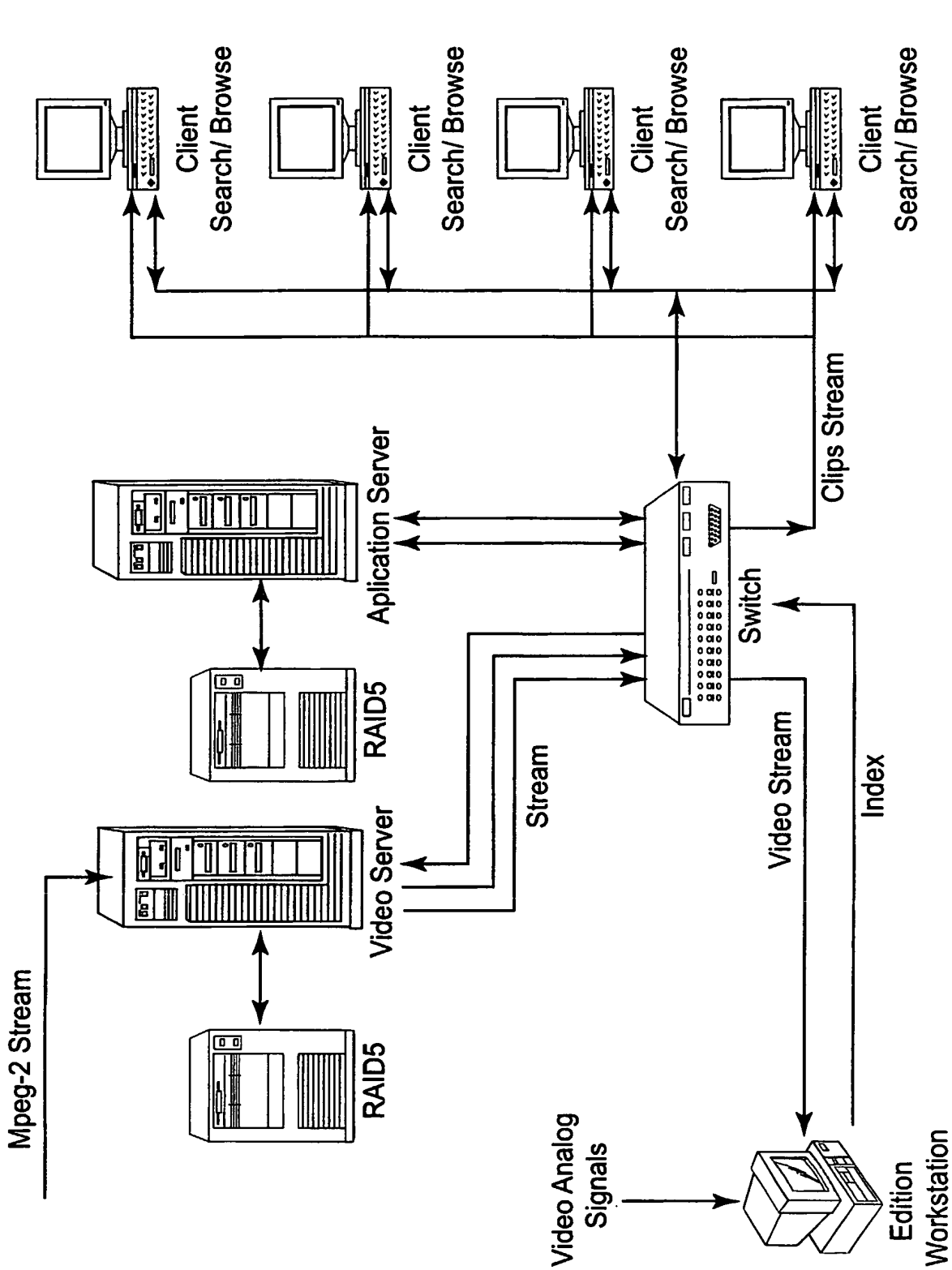


Fig.7b The signals diagram of Video Content Management System

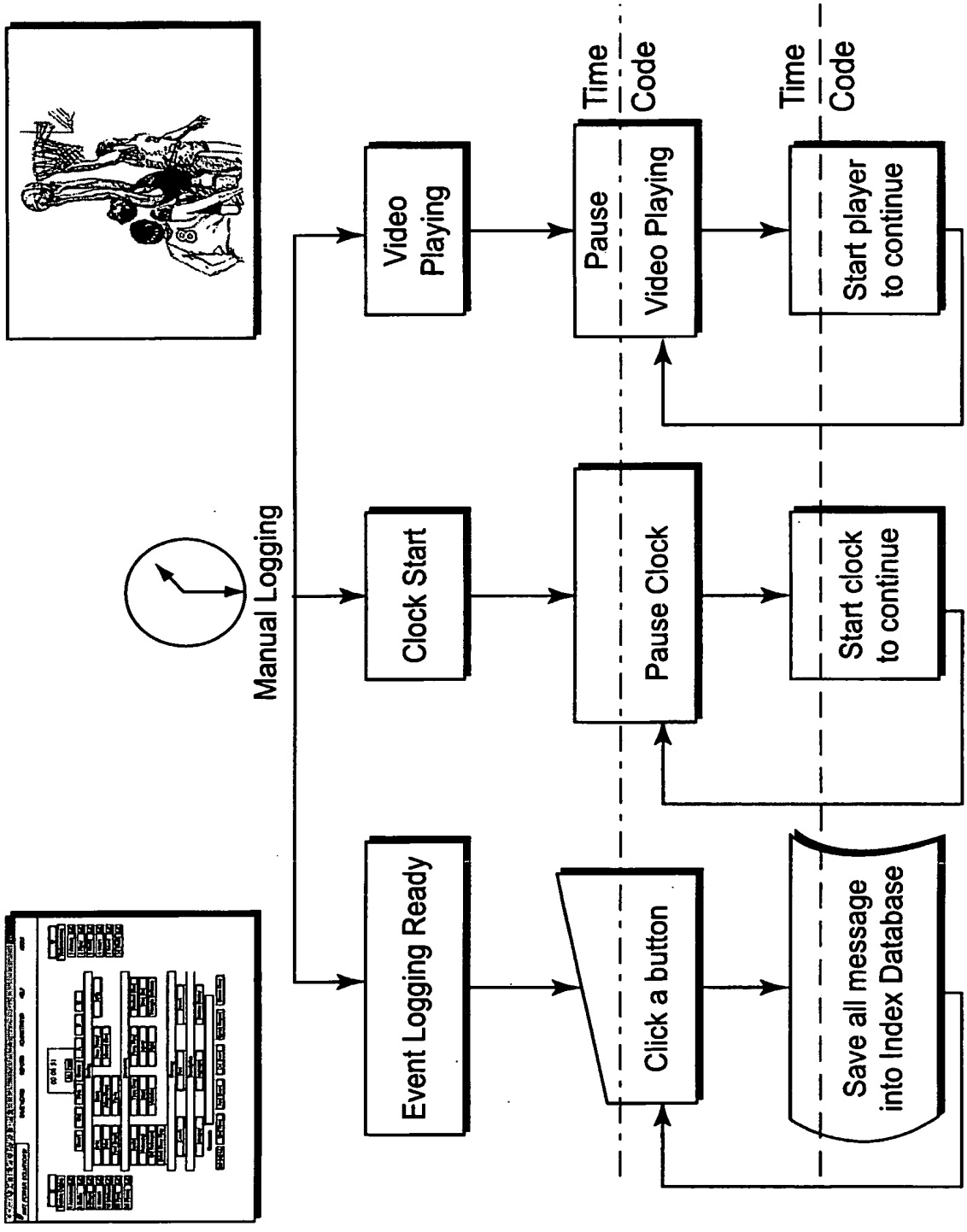


Fig.8a Manual Logger Flowchart

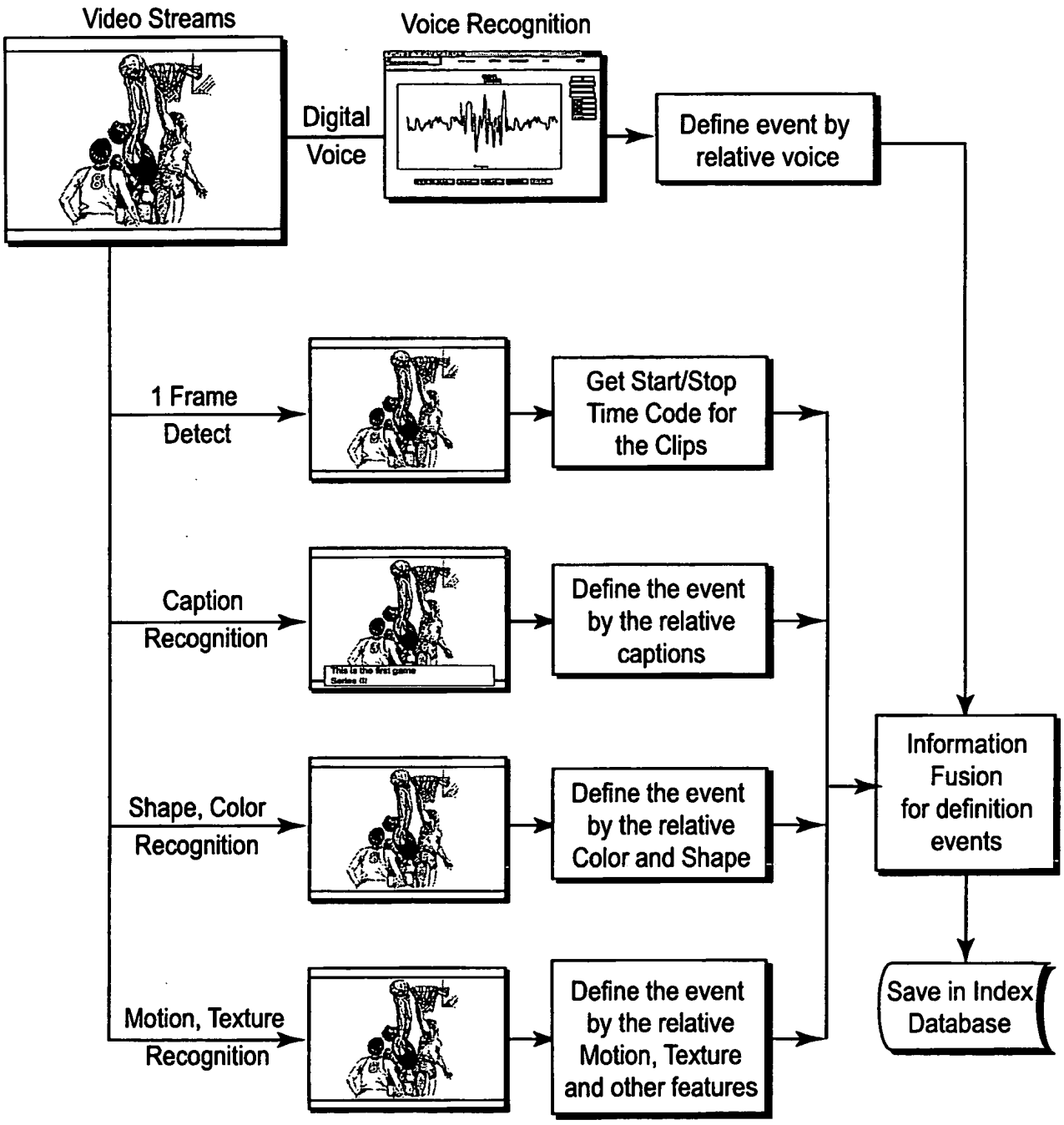


Fig.8b Automatic Logger Flowchart

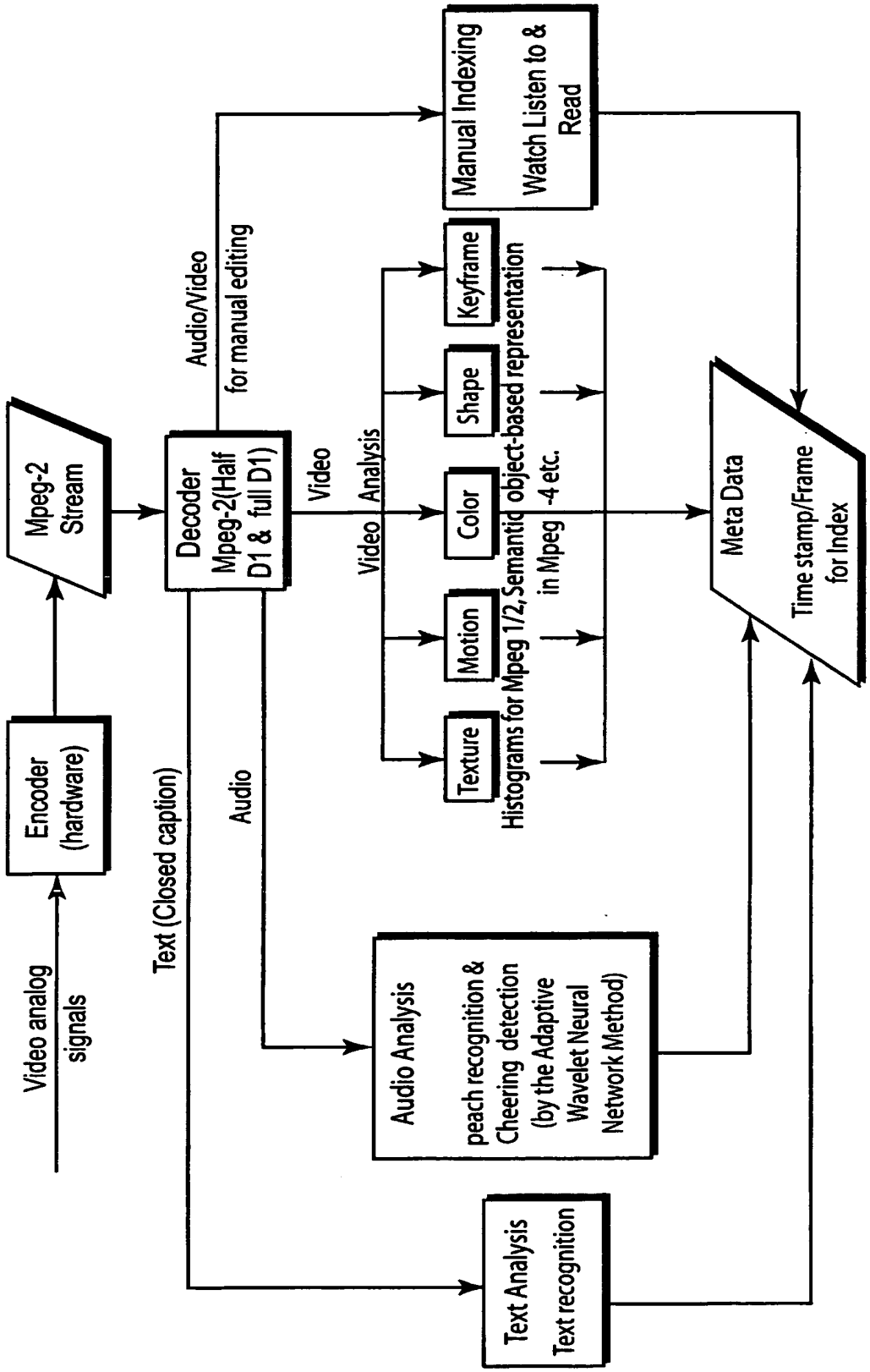


Fig.8C Video Indexing in the Edition Workstation (Manual Logger)

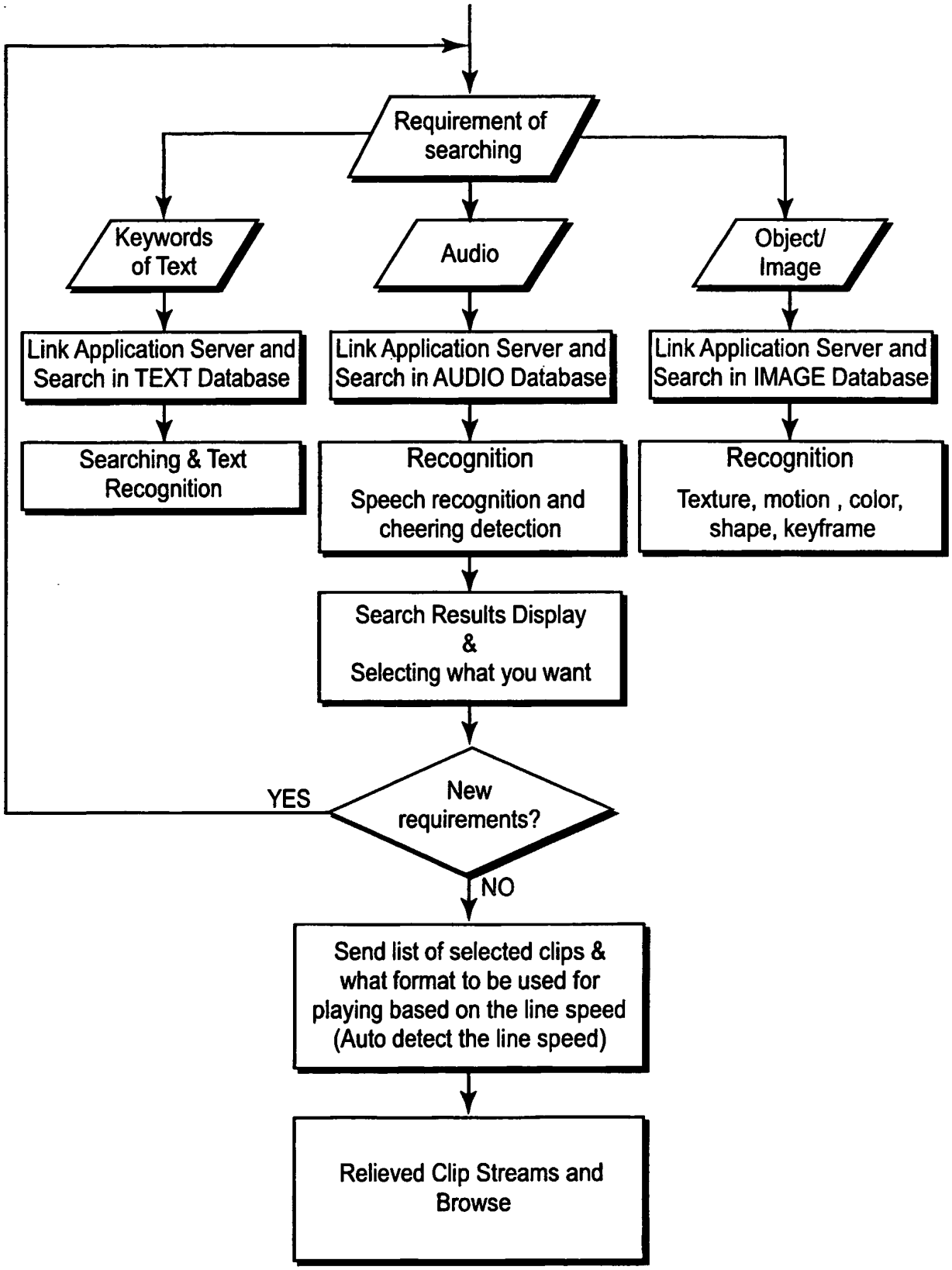


Fig.8d Search and Browse in the Clients

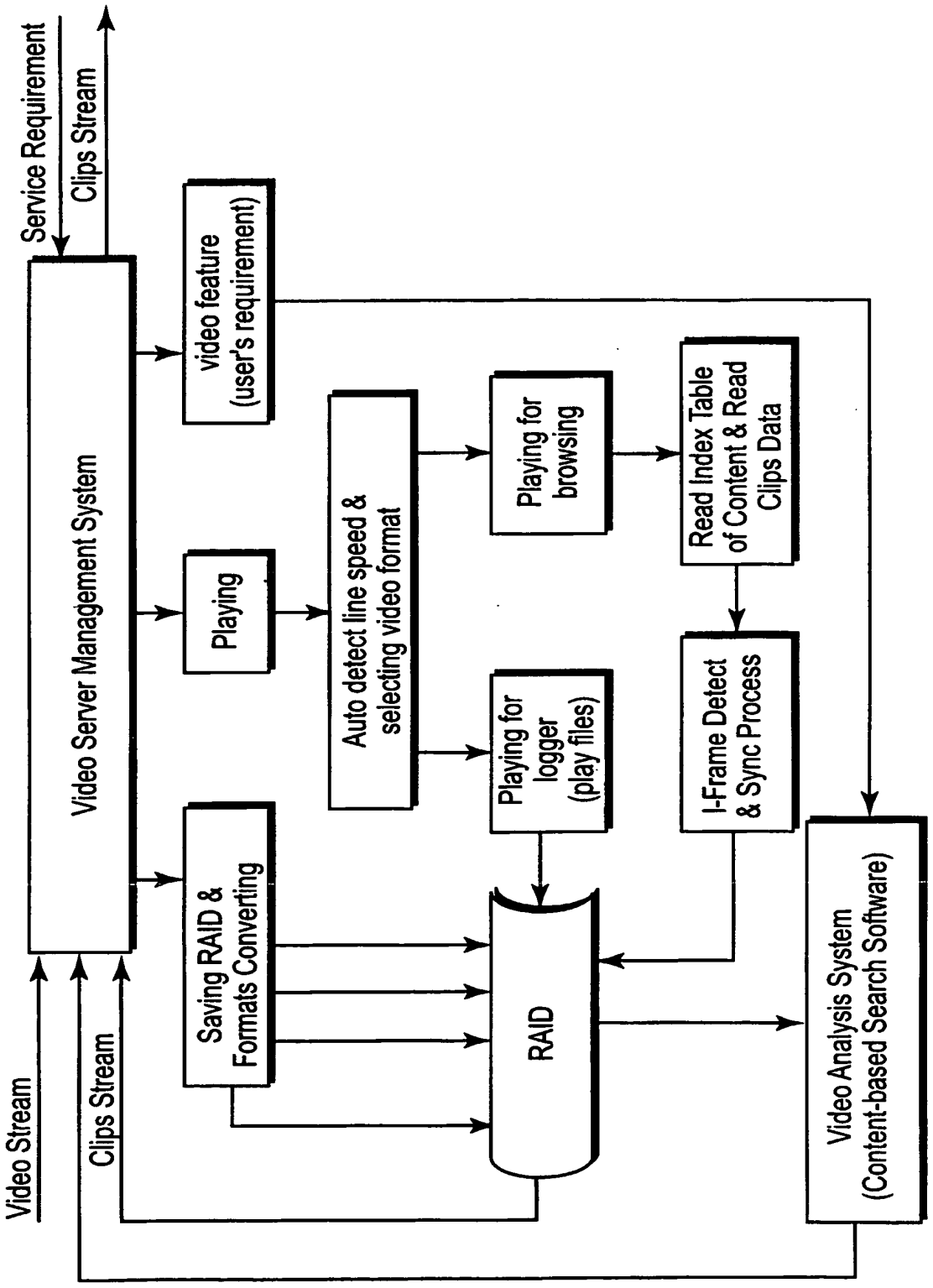


Fig.8e Video Server Flow Diagram

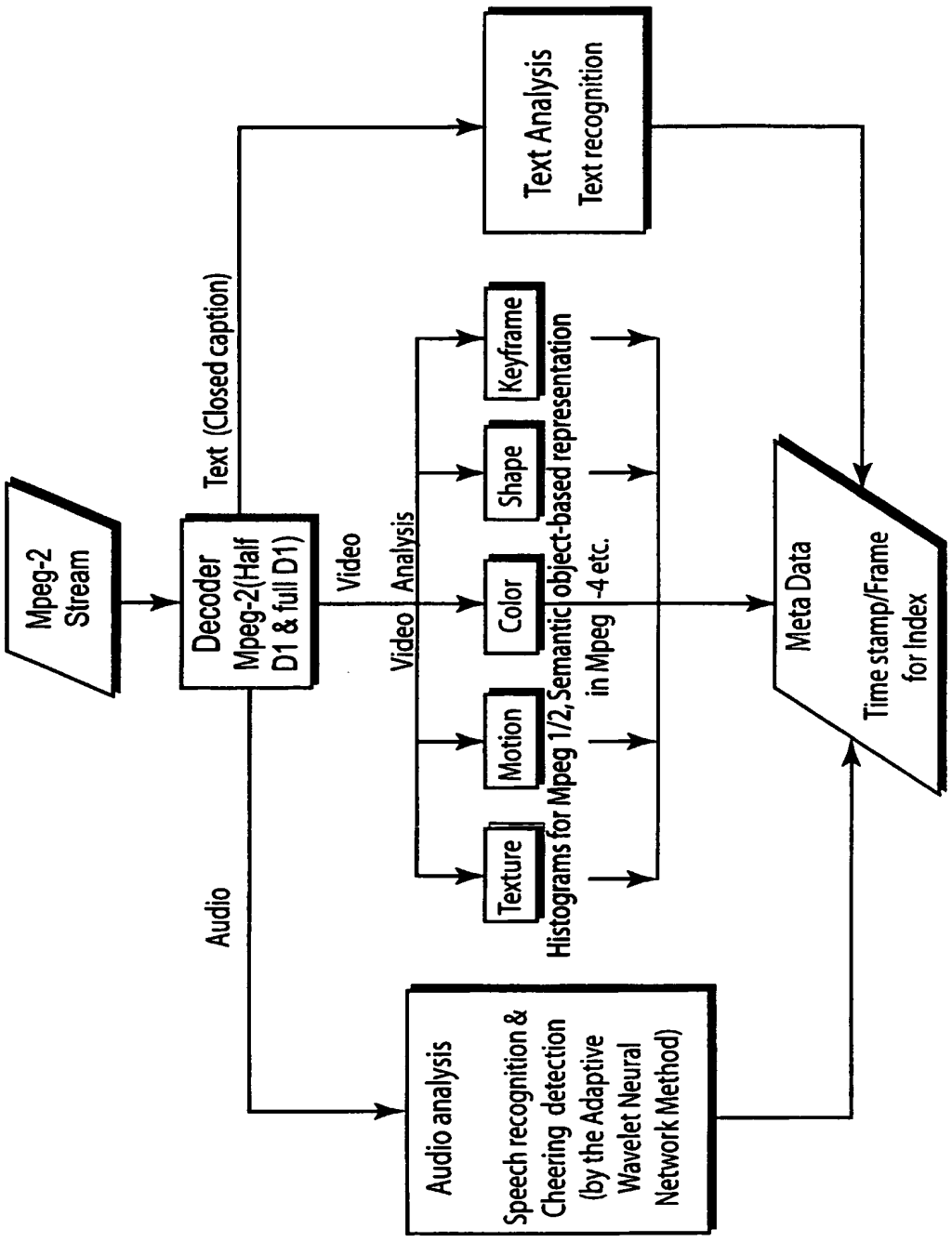


Fig.8f Video Analysis Subsystem Flow Diagram

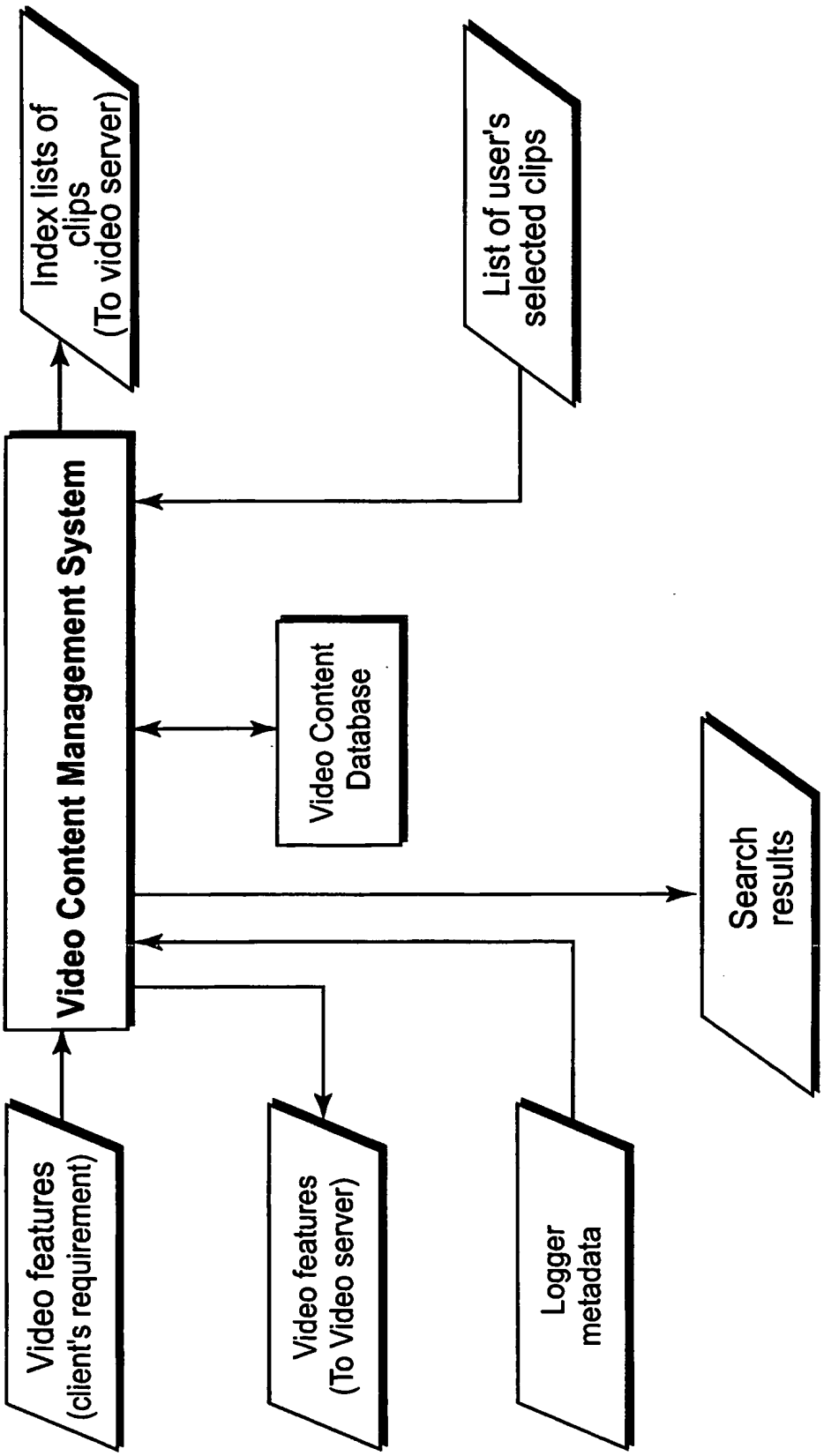


Fig.8g Application Server Flow Diagram

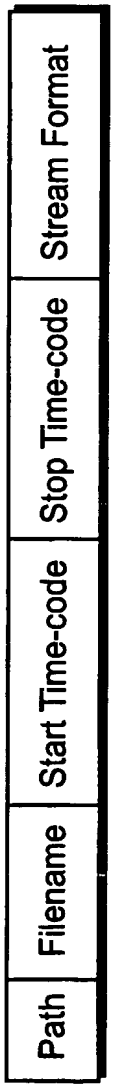


Fig.9 Video Frame Index Format

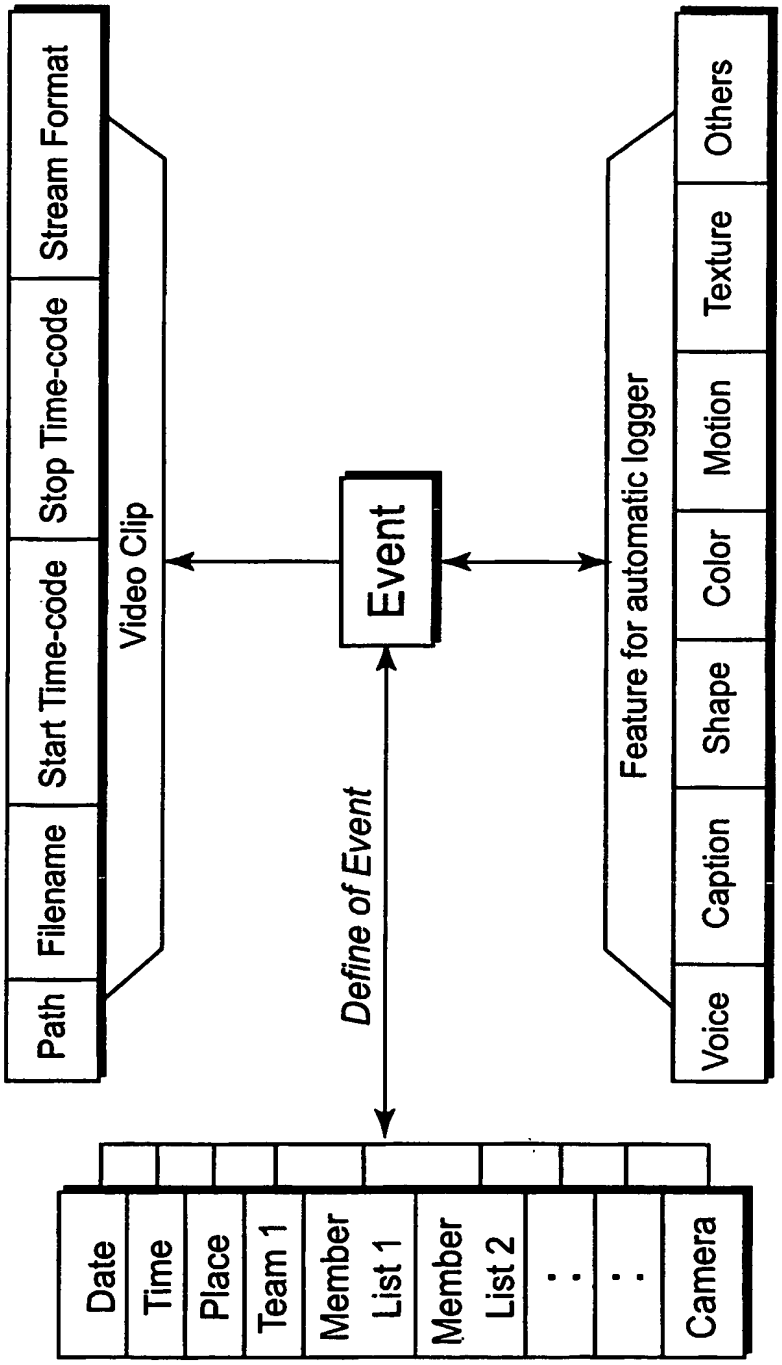


Fig.10 The Relationship between the Video Index, Features and Event Database.

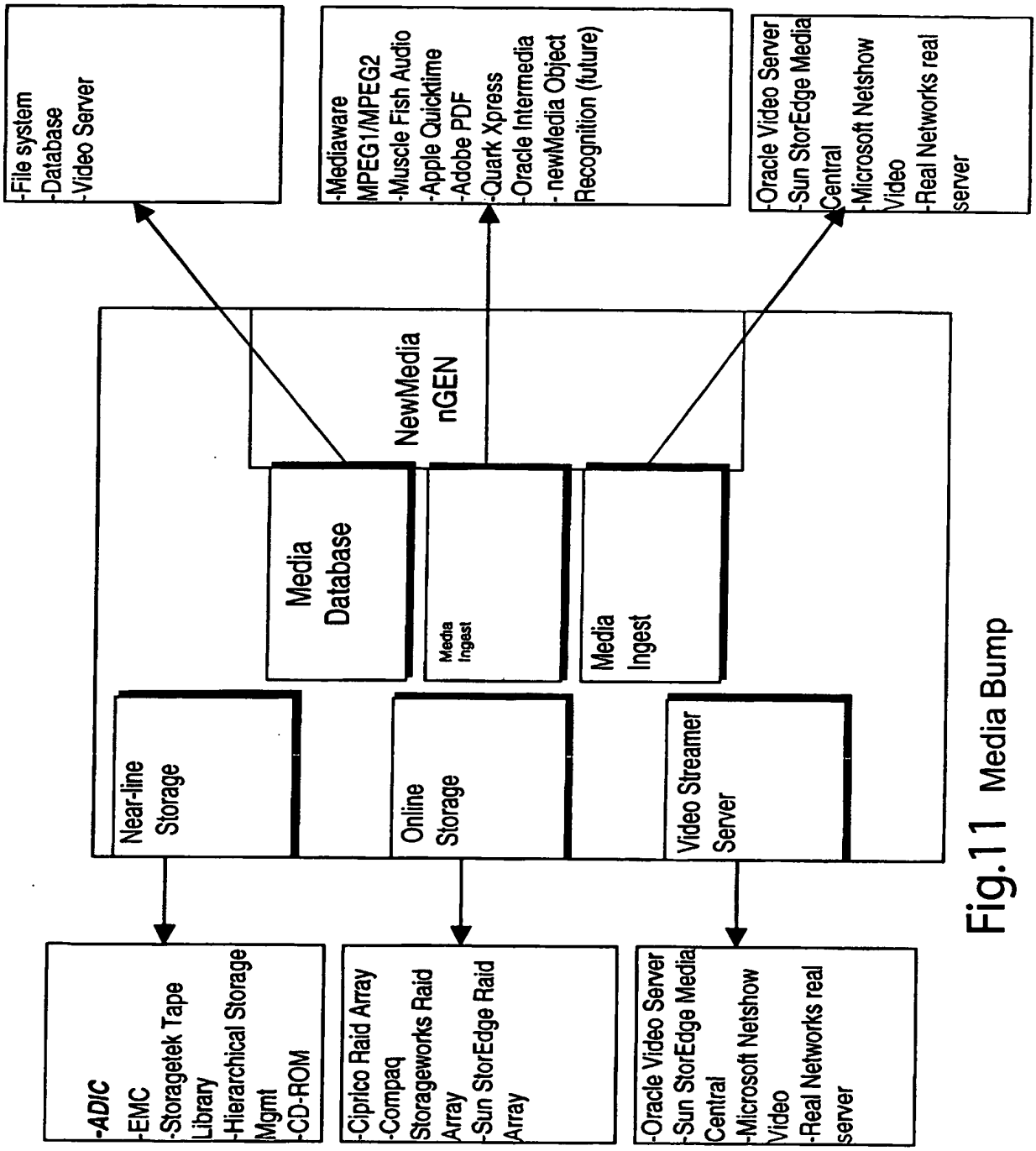


Fig.11 Media Bump

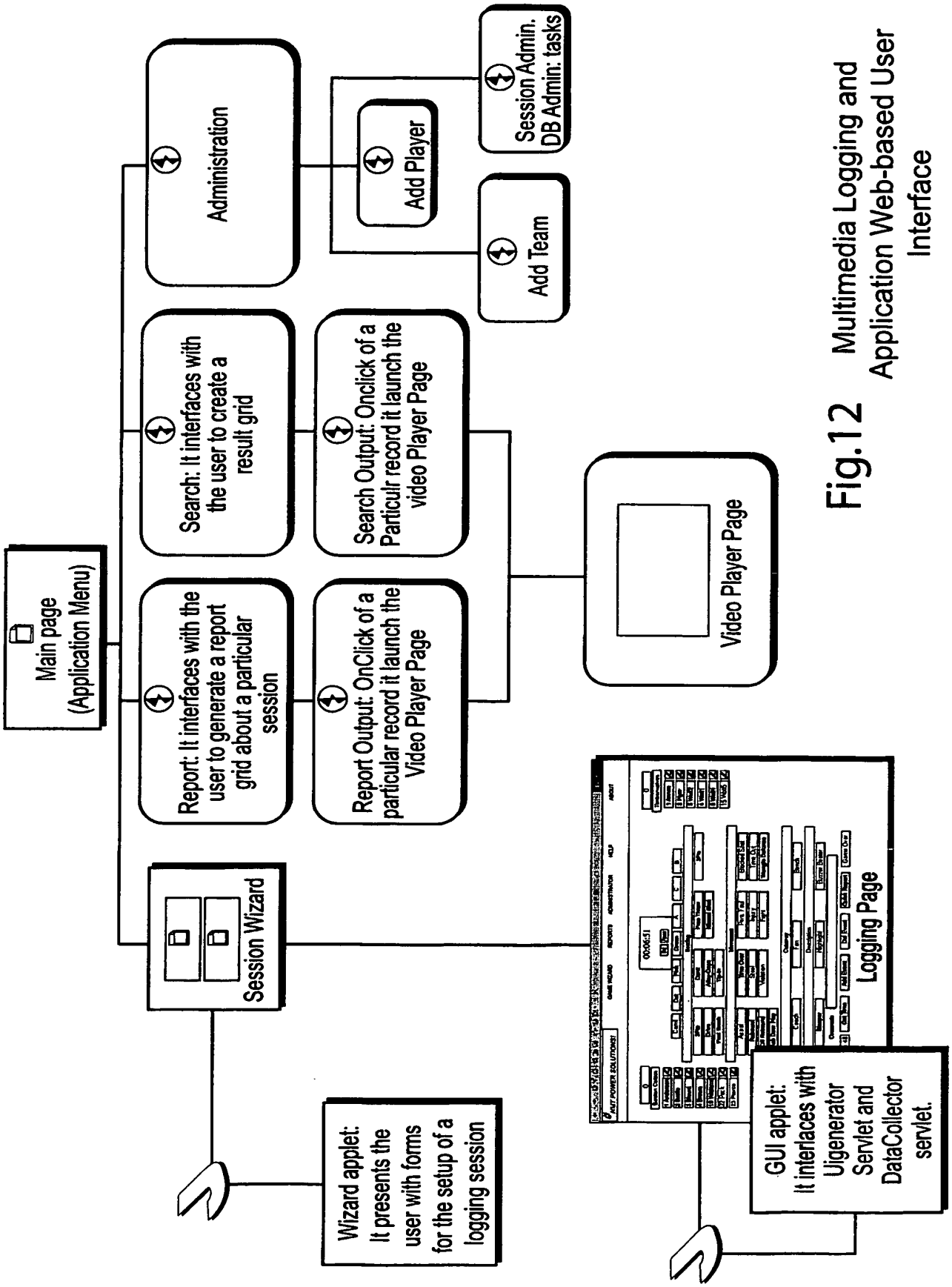


Fig.12 Multimedia Logging and Application Web-based User Interface

Database Table

GroupName	NumberOfElems	Xpos	Ypos	bckground
NMT	15	300px	250px	Red
ComNet	2	500px	250px	

Fig.13

CustID	Cust. Name	ElmType	Dblclick	Click	GroupNam e	Xpos	Ypos
1	Charles Smith	Button	List	Select	NMT	0	0
2	Alphonso Hamilton	Button	List	Select	NMT	1	0
3	Rafael Cortina	Button	List	Select	NMT	0	1
4	Rovi	Button	List	ExSelec t	ComNet	0	0
5	Cliff	Button	List	ExSelec t	ComNet	1	0

Fig.14

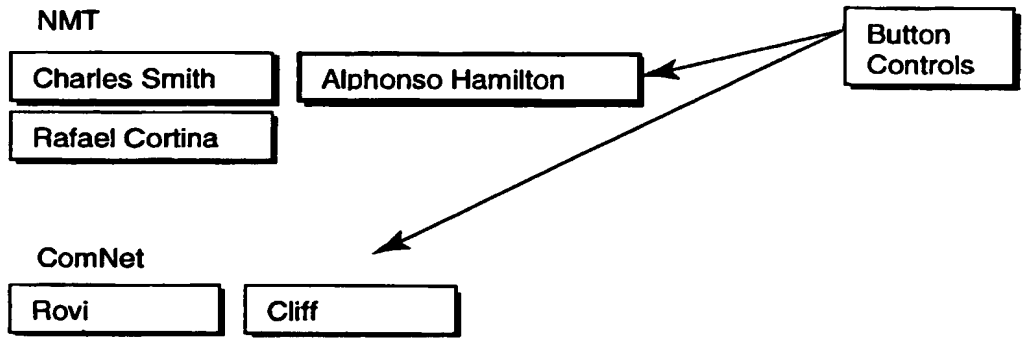


Fig.15

09/806008

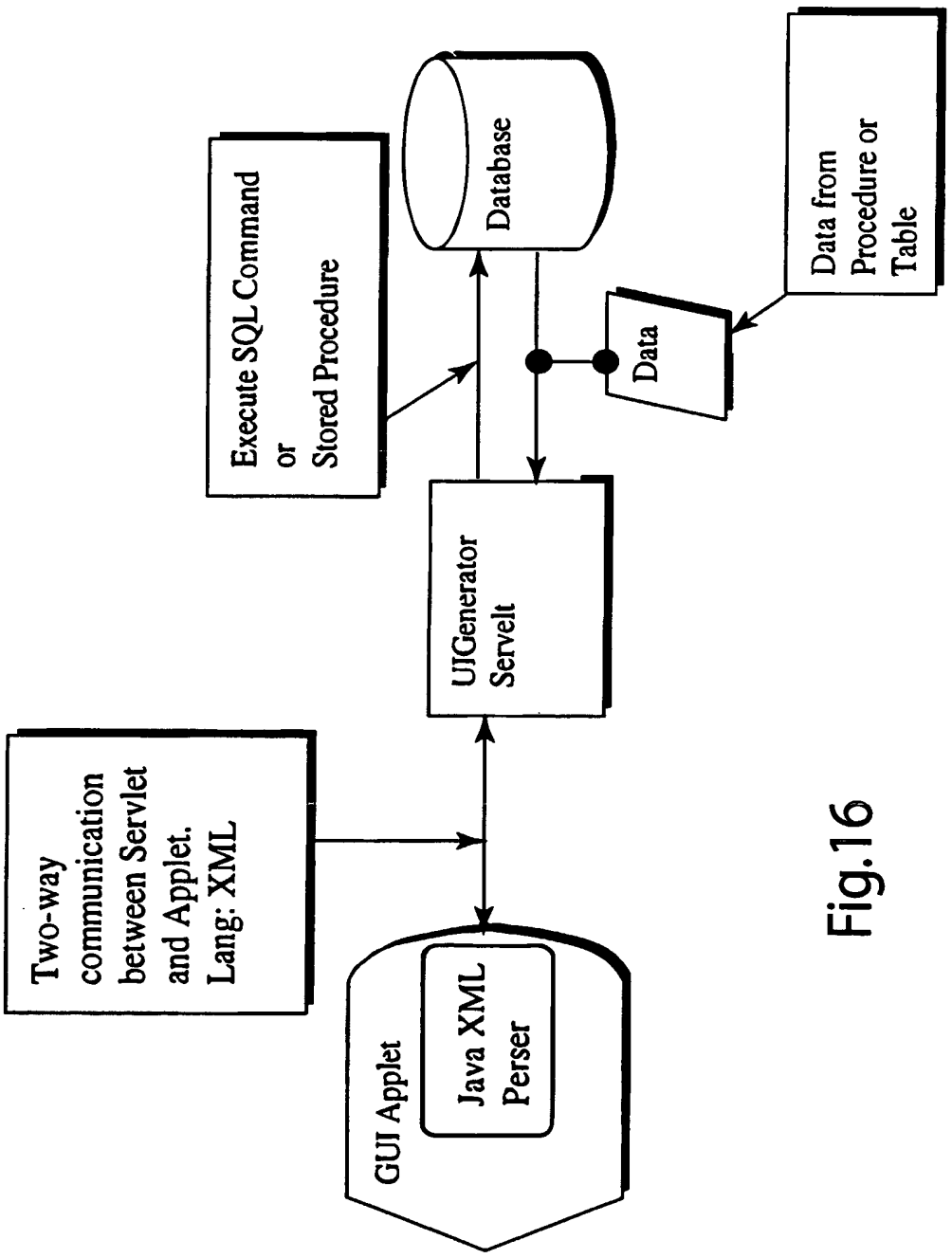


Fig.16

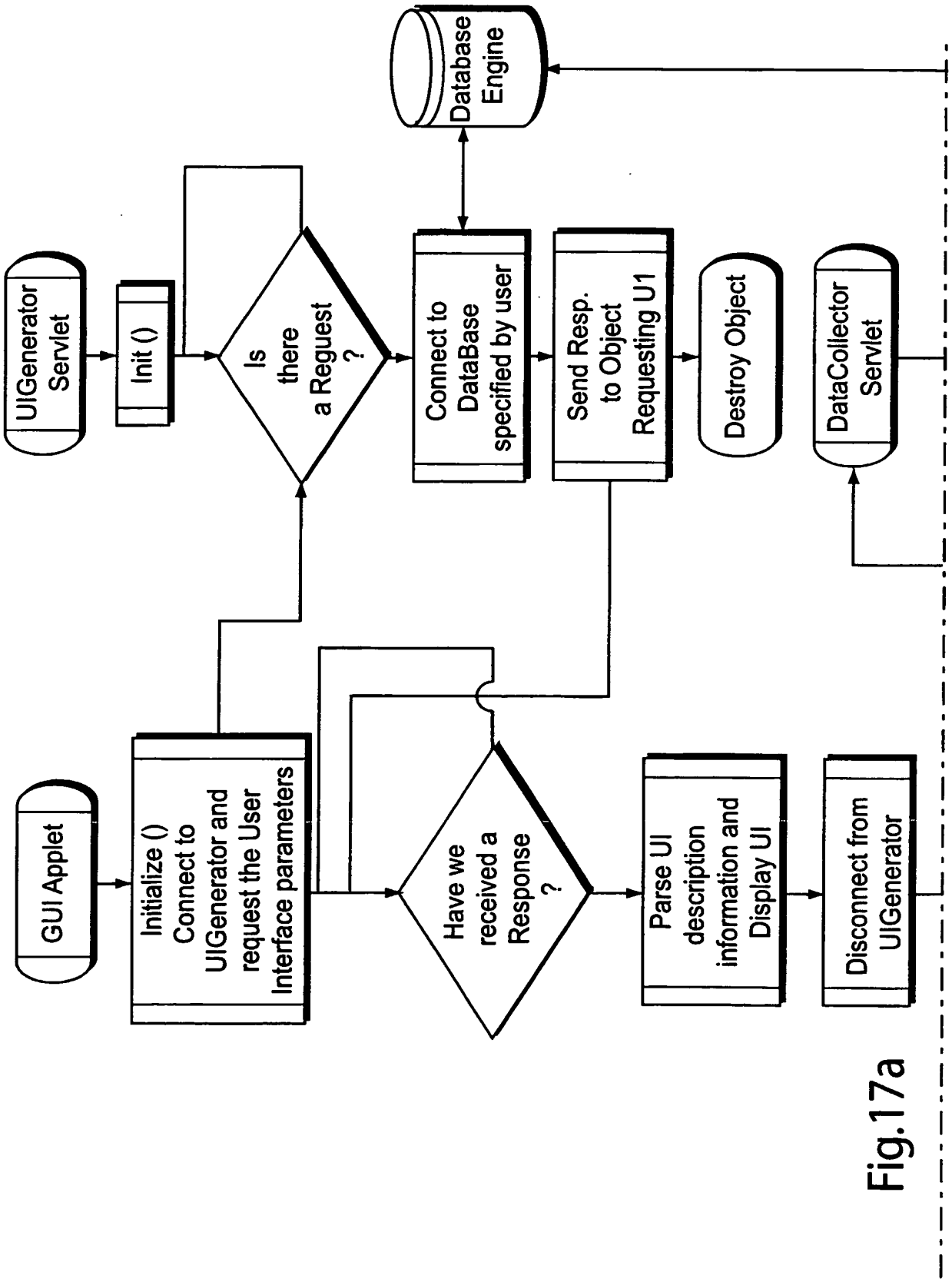

Database Engine
UIGenerator Servlet
Init ()
Is there a Reguest ?
Connect to DataBase specified by user
Send Resp. to Object Requesting U1
Destroy Object
DataCollector Servlet
GUI Applet
Initialize () Connect to UIGenerator and request the User Interface parameters
Have we received a Response ?
Parse UI description information and Display UI
Disconnect from UIGenerator

Fig.17a

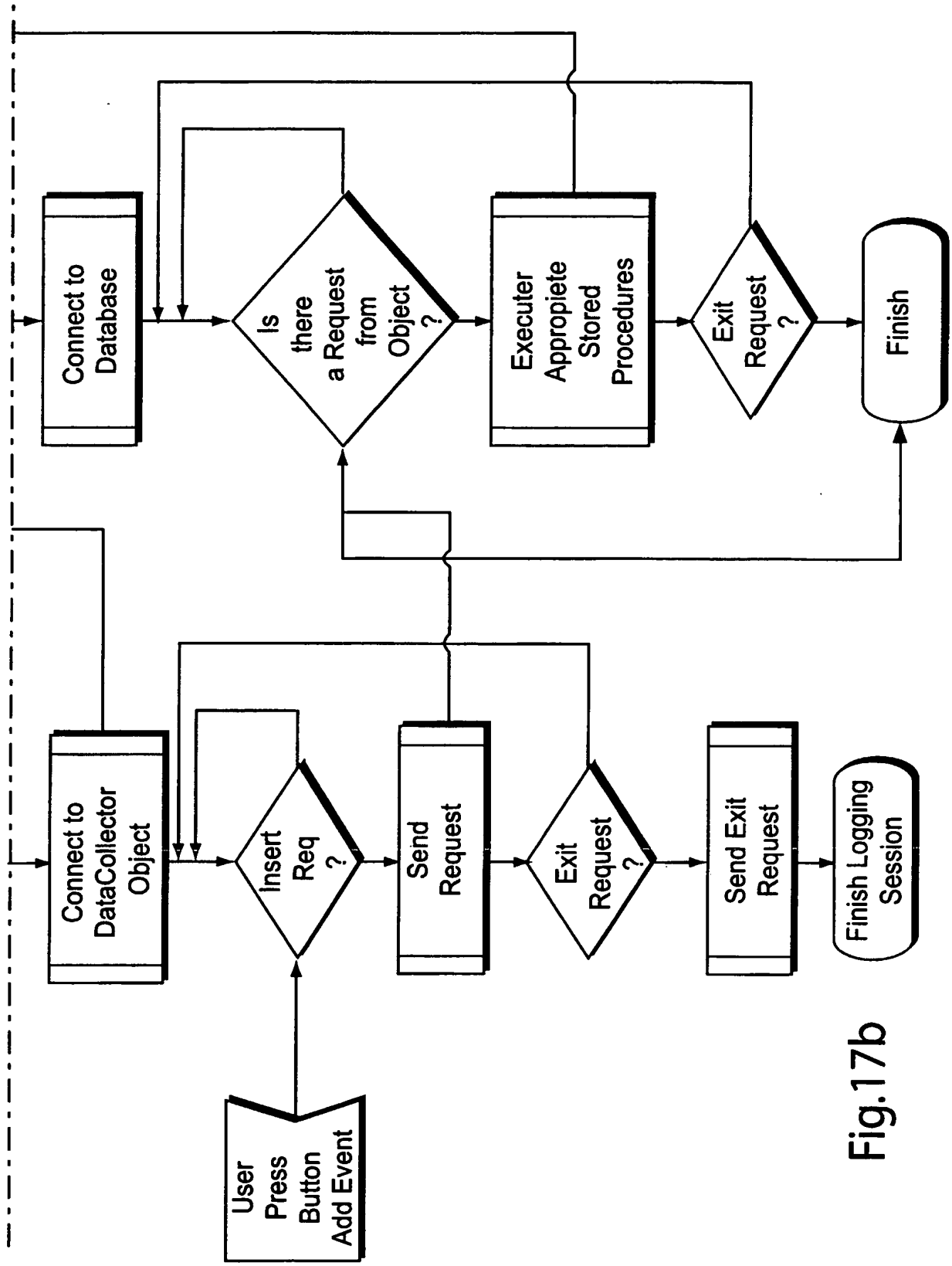

Connect to Database
Is there a Request from Object ?
Executer Appropiete Stored Procedures
Exit Request ?
Finish
Connect to DataCollector Object
Insert Req ?
Send Request
Exit Request ?
Send Exit Request
Finish Logging Session
User Press Button Add Event

Fig.17b

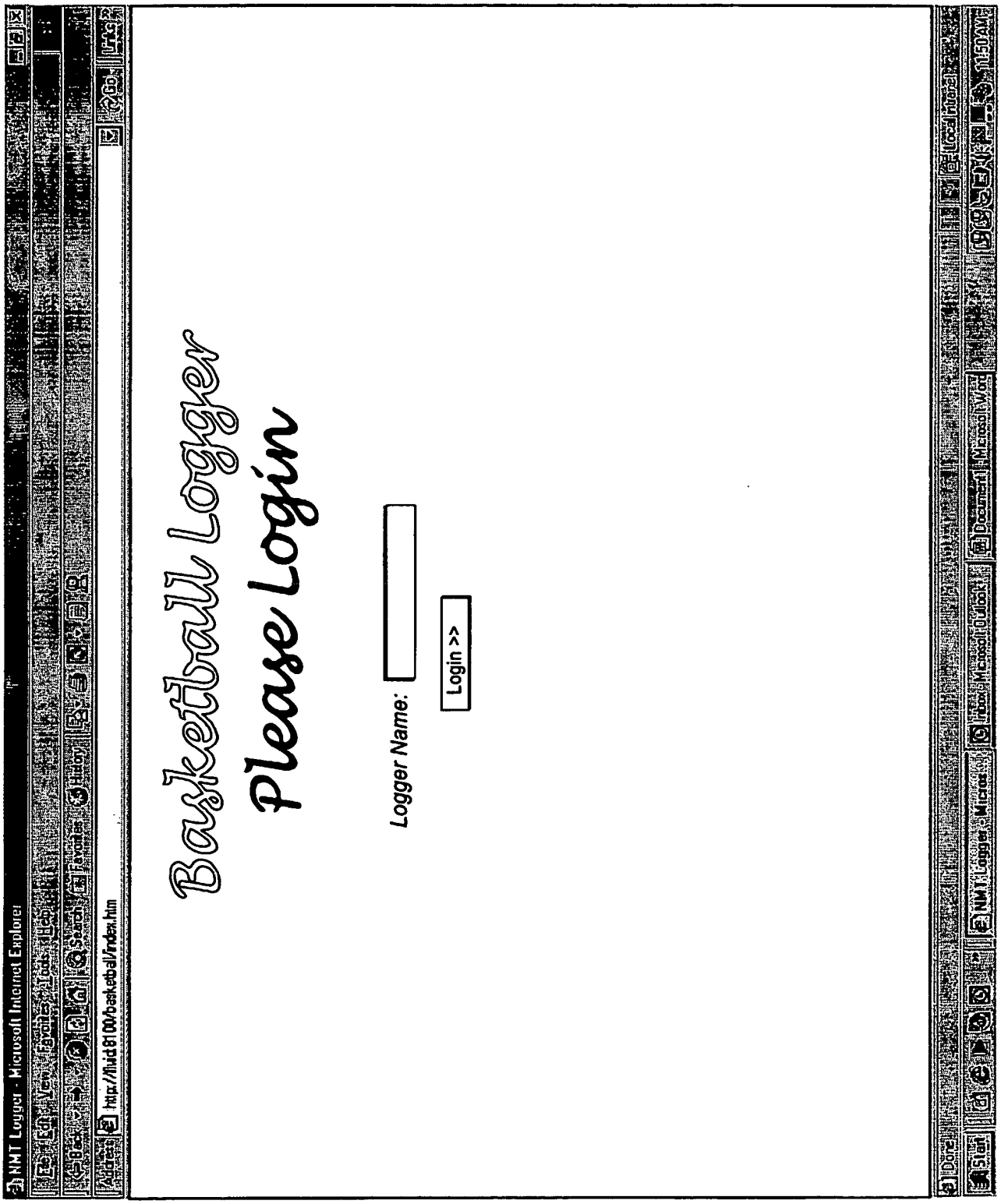

NMT Logger - Microsoft Internet Explorer
Basketball Logger
Please Login
Logger Name:
Login <>

Fig.18

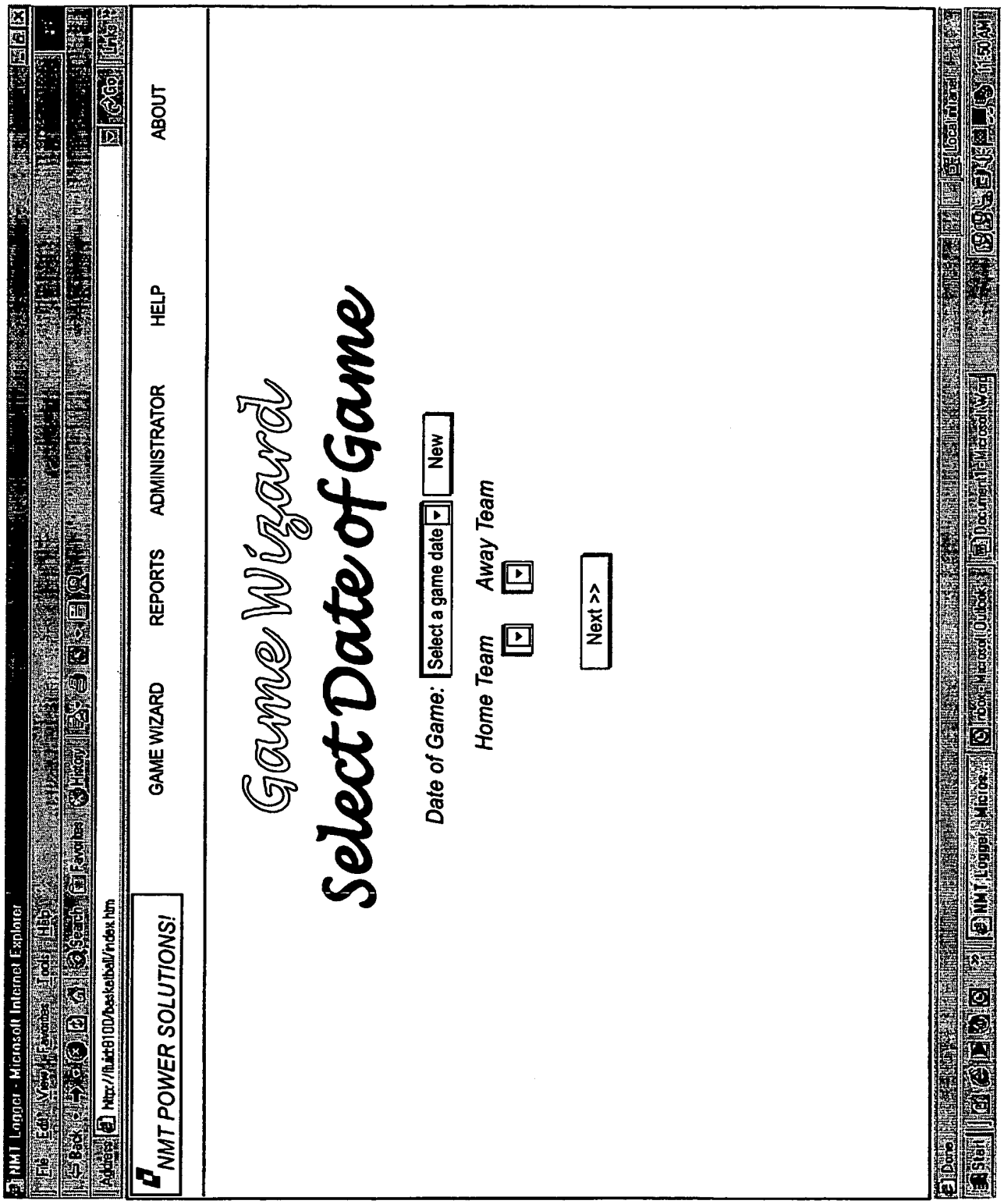

NMT Logger - Microsoft Internet Explorer
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Game Wizard
Select Date of Game
Date of Game:
Select a game date
New
Home Team
Away Team
Next >>

Fig.19

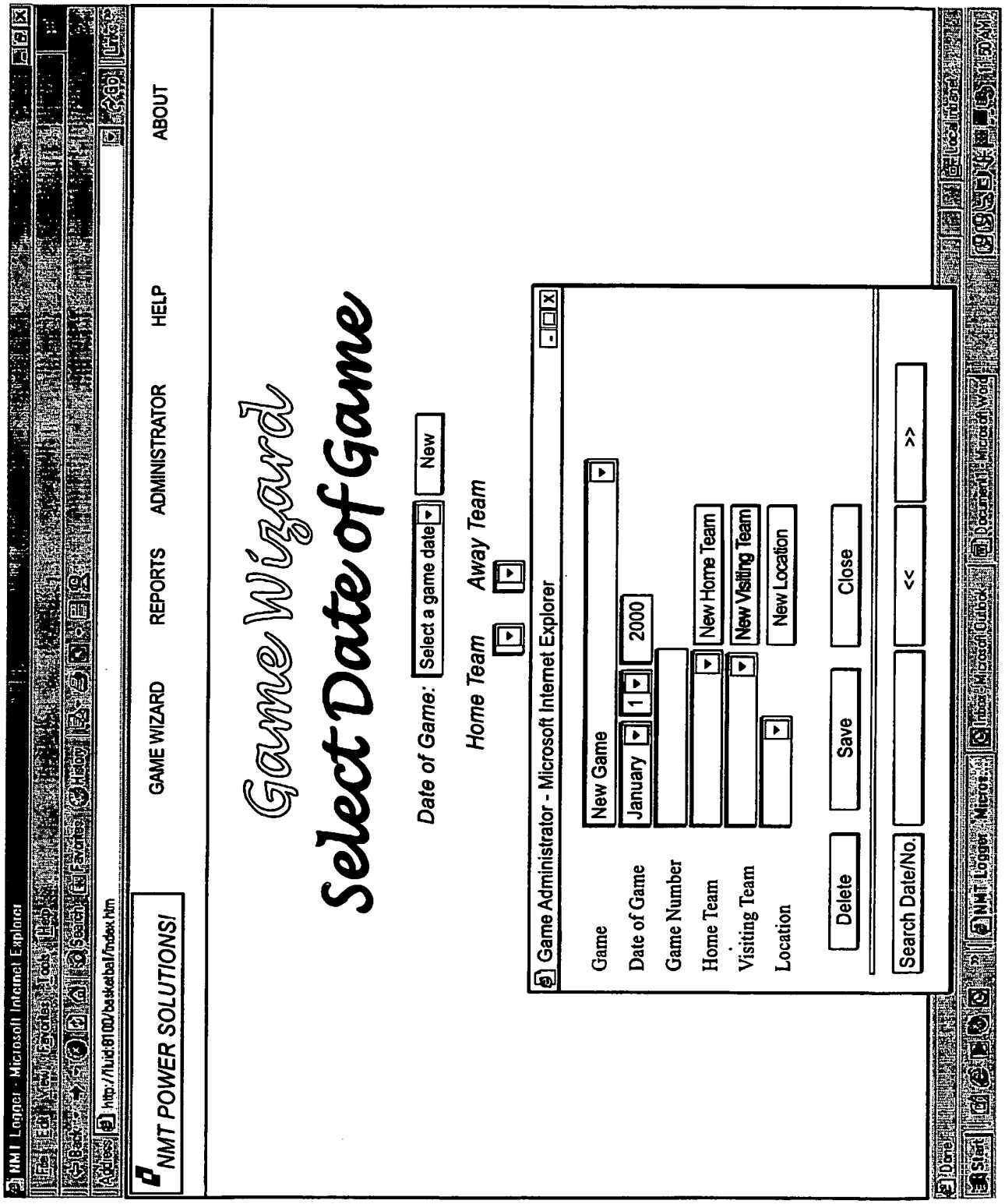

NMT Logger - Microsoft Internet Explorer
http://fluid:8100/basketball/index.htm
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Game Wizard
Select Date of Game
Date of Game: Select a game date
New
Home Team
Away Team
Game Administrator - Microsoft Internet Explorer
Game
New Game
Date of Game
January
1
2000
Game Number
Home Team
New Home Team
Visiting Team
New Visiting Team
Location
New Location
Delete
Save
Close
Search Date/No.
<<
>>

Fig.20

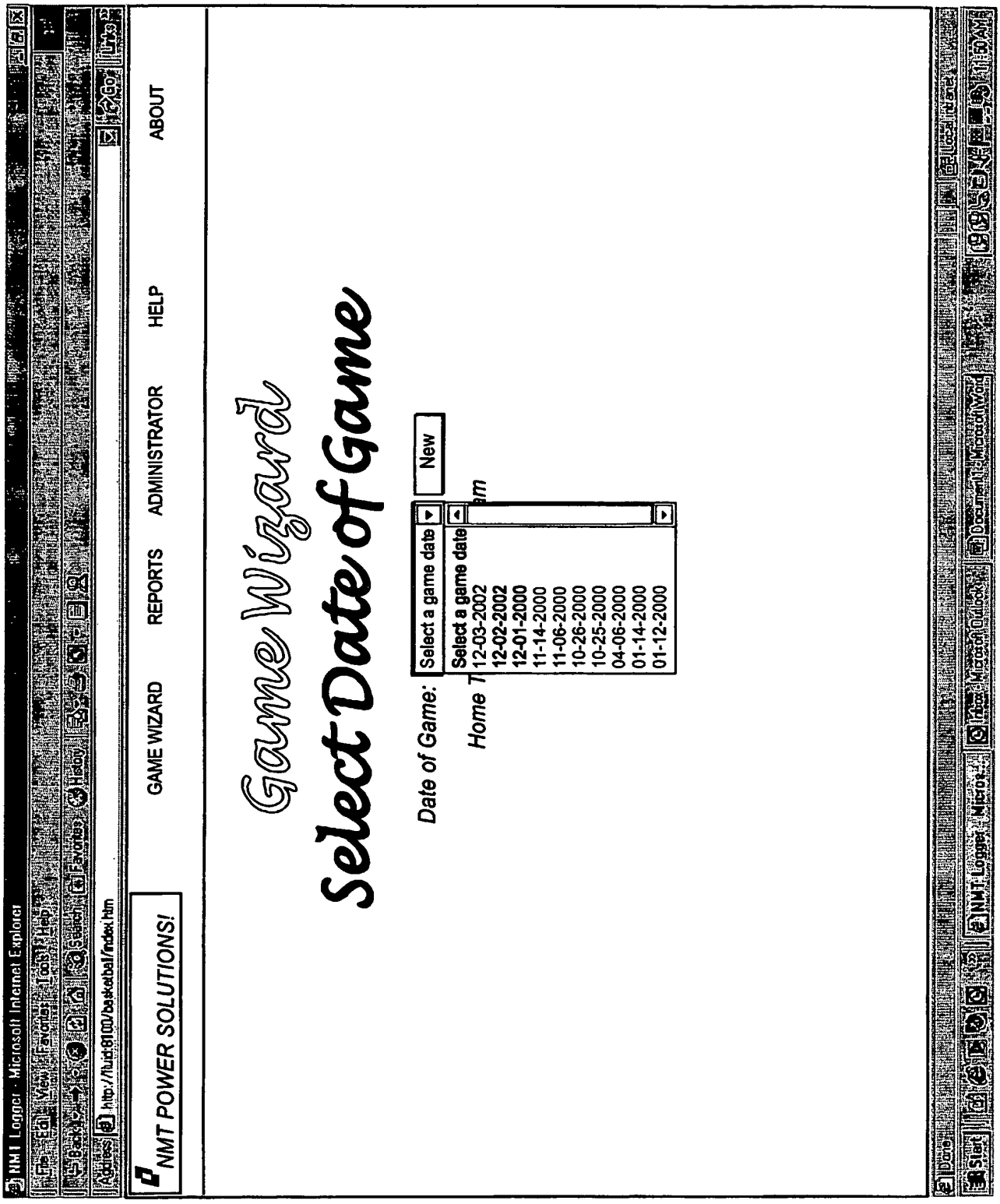

NMI Logger - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://hunt:8100/basketball/index.htm
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Game Wizard
Select Date of Game
Date of Game:
Select a game date
New
Home T
am
Select a game date
12-03-2002
12-02-2002
12-01-2000
11-14-2000
11-06-2000
10-26-2000
10-25-2000
04-06-2000
01-14-2000
01-12-2000
Start
Done

Fig.21

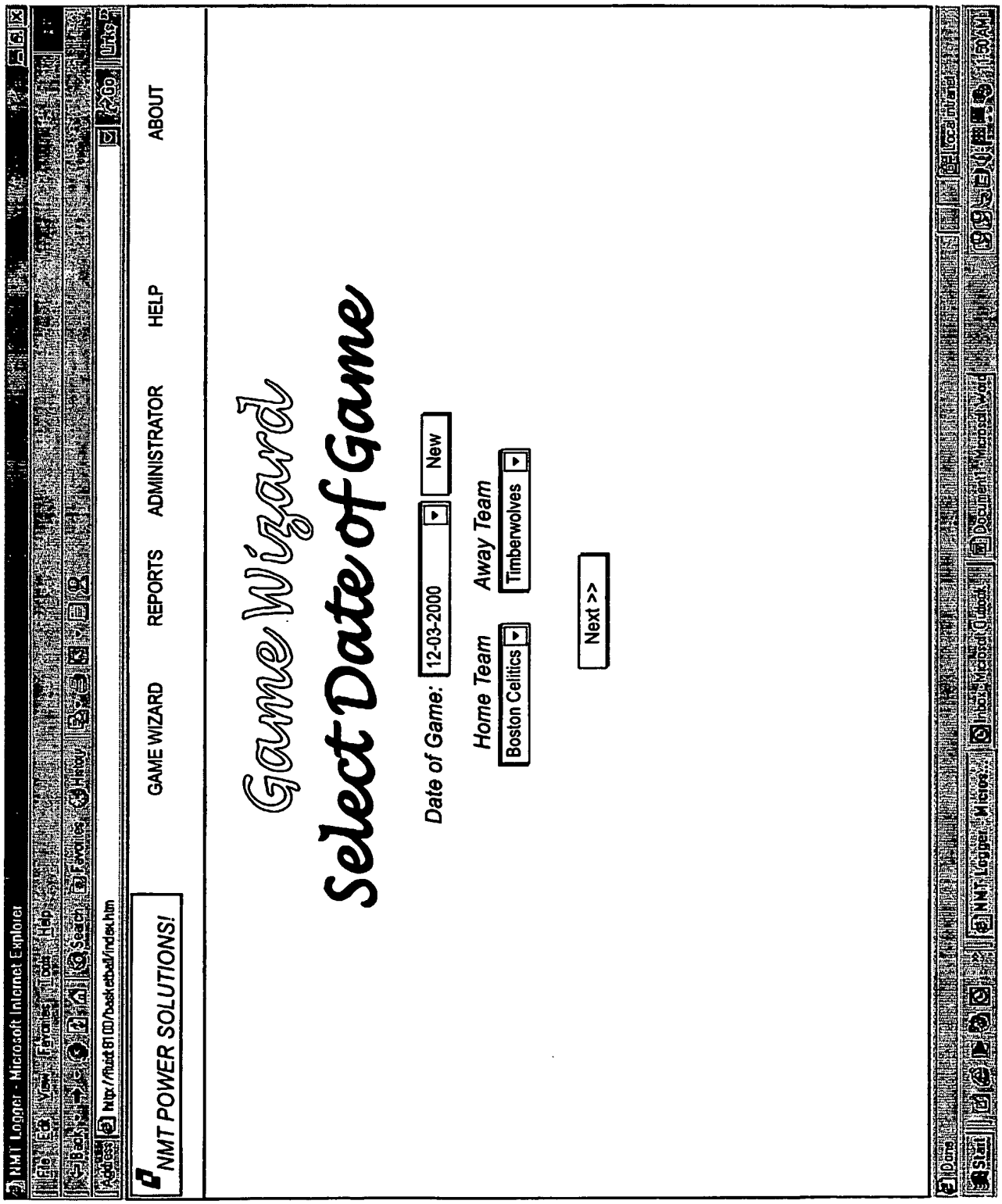

NMT Logger - Microsoft Internet Explorer
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Game Wizard
Select Date of Game
Date of Game: 12-03-2000
New
Home Team
Boston Celitics
Away Team
Timberwolves
Next >>

Fig.22

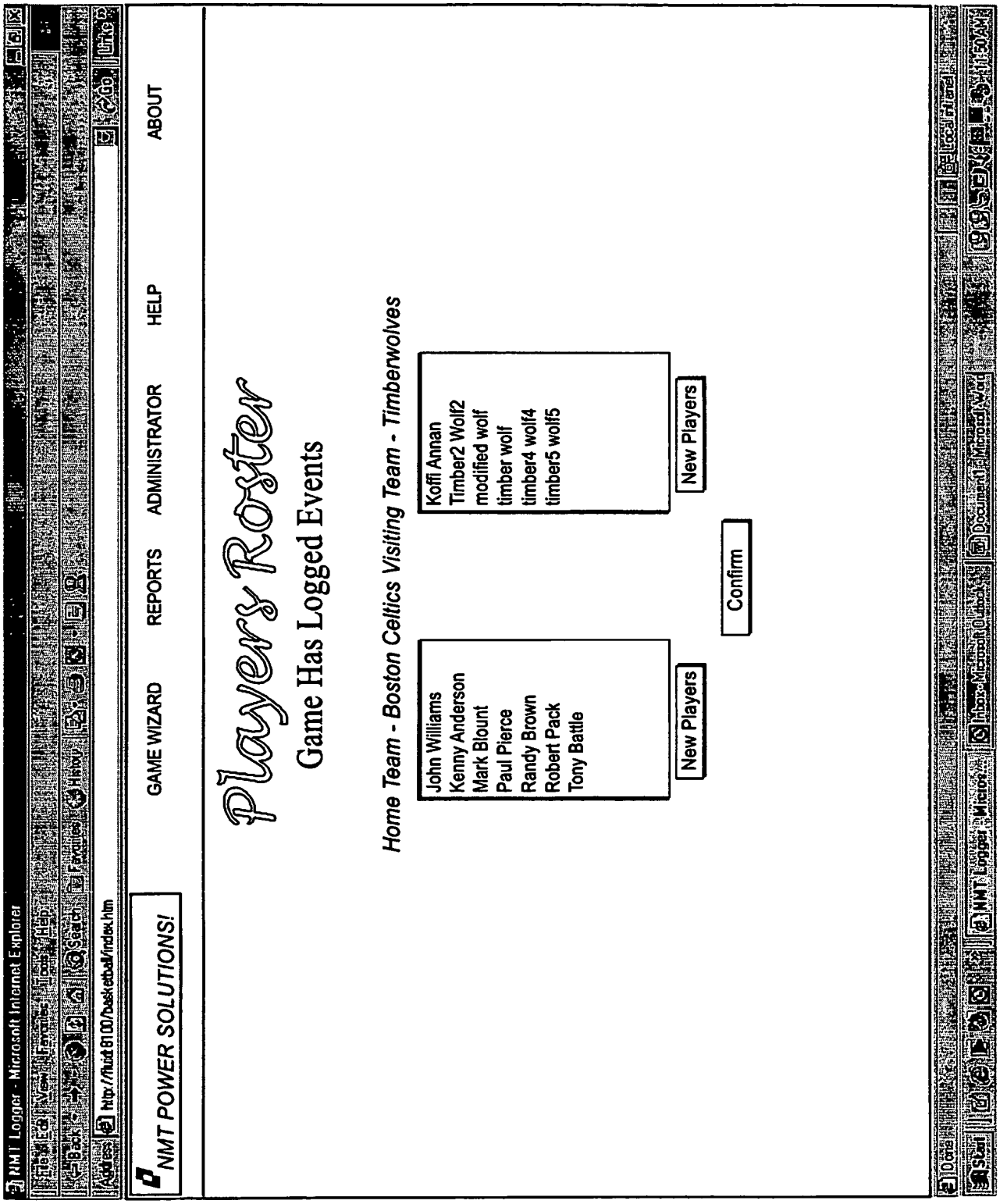

NIMT Logger - Microsoft Internet Explorer
http://fluid:8100/basketball/index.htm
NIMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Players Roster
Game Has Logged Events
Home Team - Boston Celtics Visiting Team - Timberwolves
John Williams
Kenny Anderson
Mark Blount
Paul Pierce
Randy Brown
Robert Pack
Tony Battle
New Players
Confirm
Koffi Annan
Timber2 Wolf2
modified wolf
timber wolf
timber4 wolf4
timber5 wolf5
New Players

Fig.23

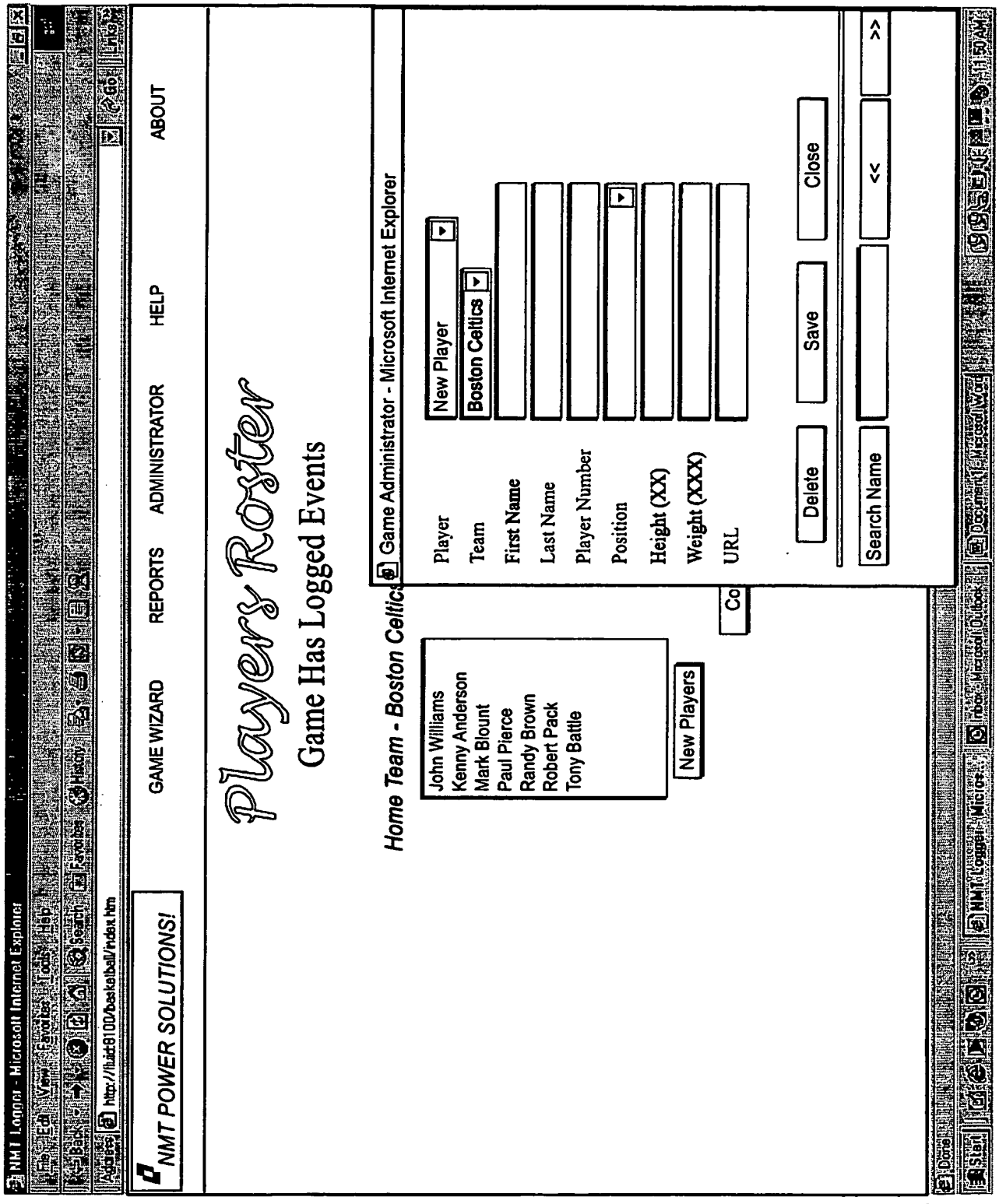

NMT Logger - Microsoft Internet Explorer
http://tlabt6100/basketball/index.htm
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Players Roster
Game Has Logged Events
Home Team - Boston Celtics
John Williams
Kenny Anderson
Mark Blount
Paul Pierce
Randy Brown
Robert Pack
Tony Battle
New Players
Game Administrator - Microsoft Internet Explorer
Player
New Player
Team
Boston Celtics
First Name
Last Name
Player Number
Position
Height (XX)
Weight (XXX)
URL
Delete
Save
Close
Search Name
<<
>>

Fig.24

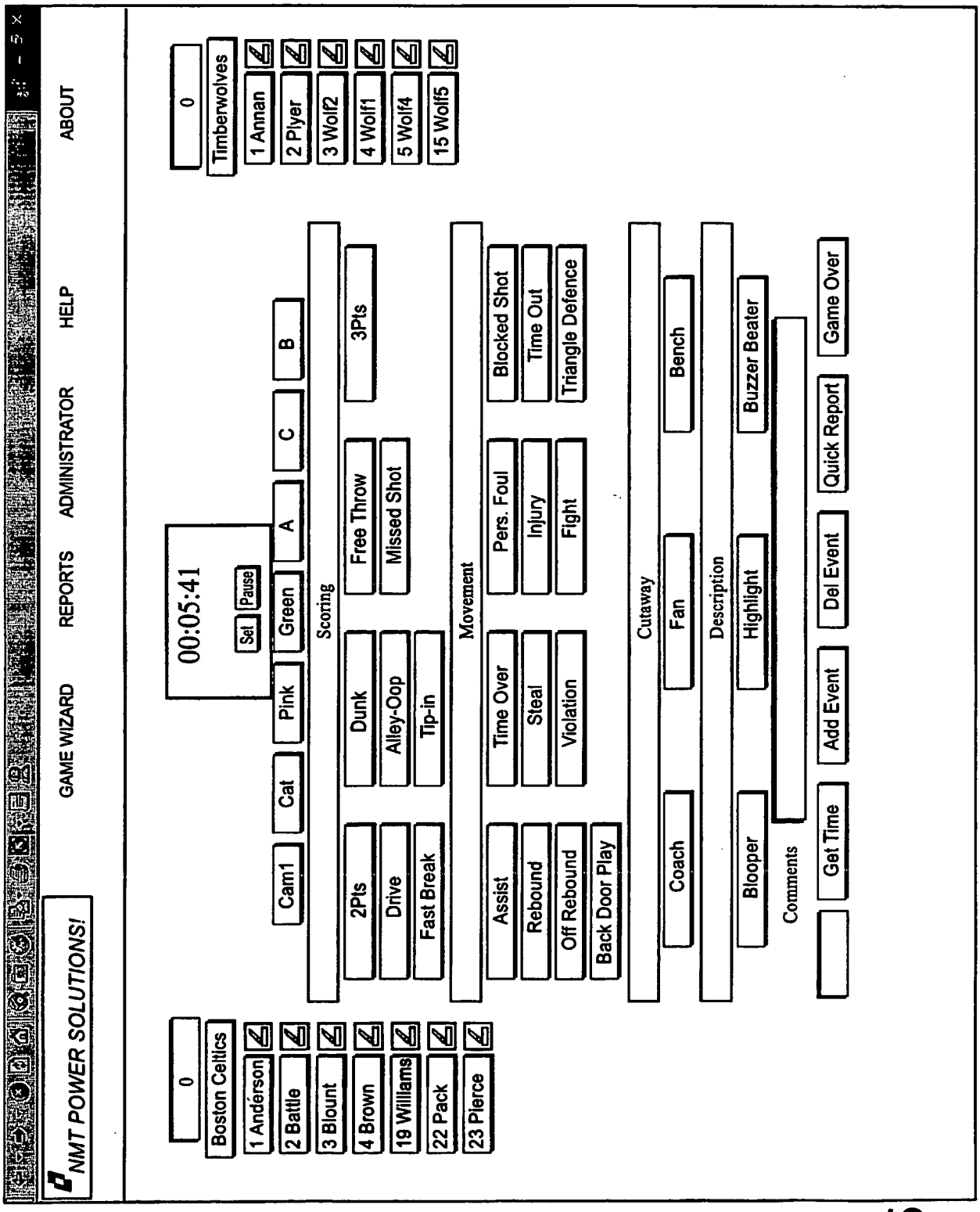

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
0
Boston Celtics
1 Anderson
2 Battle
3 Blount
4 Brown
19 Williams
22 Pack
23 Pierce
Cam1
Cat
Pink
Green
00:05:41
Set
Pause
A
C
B
0
Timberwolves
1 Annan
2 Plyer
3 Wolf2
4 Wolf1
5 Wolf4
15 Wolf5
Scoring
2Pts
Drive
Fast Break
Dunk
Alley-Oop
Tip-in
Free Throw
Missed Shot
3Pts
Movement
Assist
Rebound
Off Rebound
Back Door Play
Time Over
Steal
Violation
Pers. Foul
Injury
Fight
Blocked Shot
Time Out
Triangle Defence
Cutaway
Coach
Blooper
Fan
Highlight
Bench
Buzzer Beater
Description
Comments
Get Time
Add Event
Del Event
Quick Report
Game Over

Fig.25

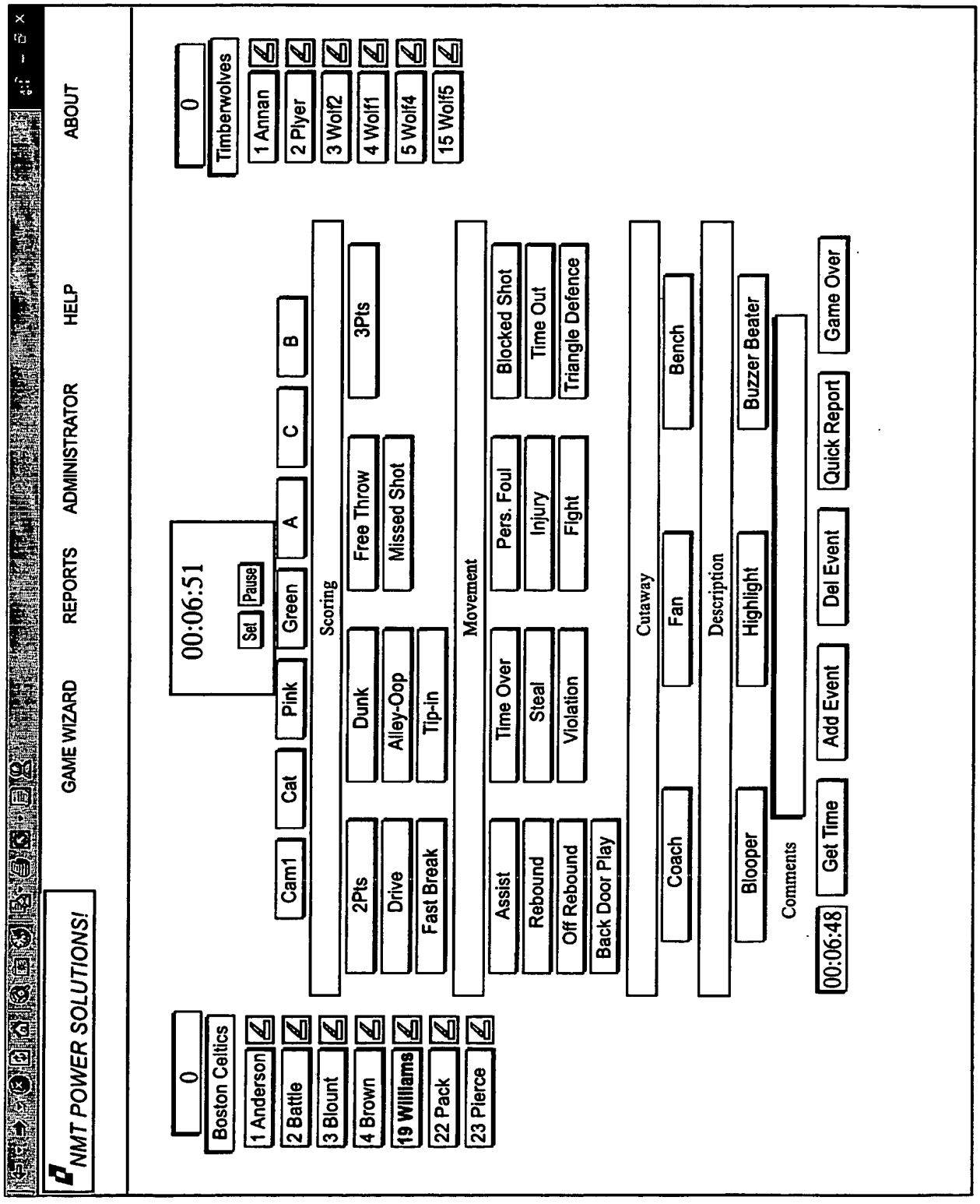

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
0
Boston Celtics
1 Anderson
2 Battle
3 Blount
4 Brown
19 Williams
22 Pack
23 Pierce
00:06:51
Set
Pause
Cam1
Cat
Pink
Green
A
C
B
Scoring
2Pts
Drive
Fast Break
Dunk
Alley-Oop
Tip-in
Free Throw
Missed Shot
3Pts
Movement
Assist
Rebound
Off Rebound
Back Door Play
Time Over
Steal
Violation
Pers. Foul
Injury
Fight
Blocked Shot
Time Out
Triangle Defence
Cutaway
Coach
Blooper
Fan
Highlight
Bench
Buzzer Beater
Description
Comments
00:06:48
Get Time
Add Event
Del Event
Quick Report
Game Over
0
Timberwolves
1 Annan
2 Plyer
3 Wolf2
4 Wolf1
5 Wolf4
15 Wolf5

Fig.26

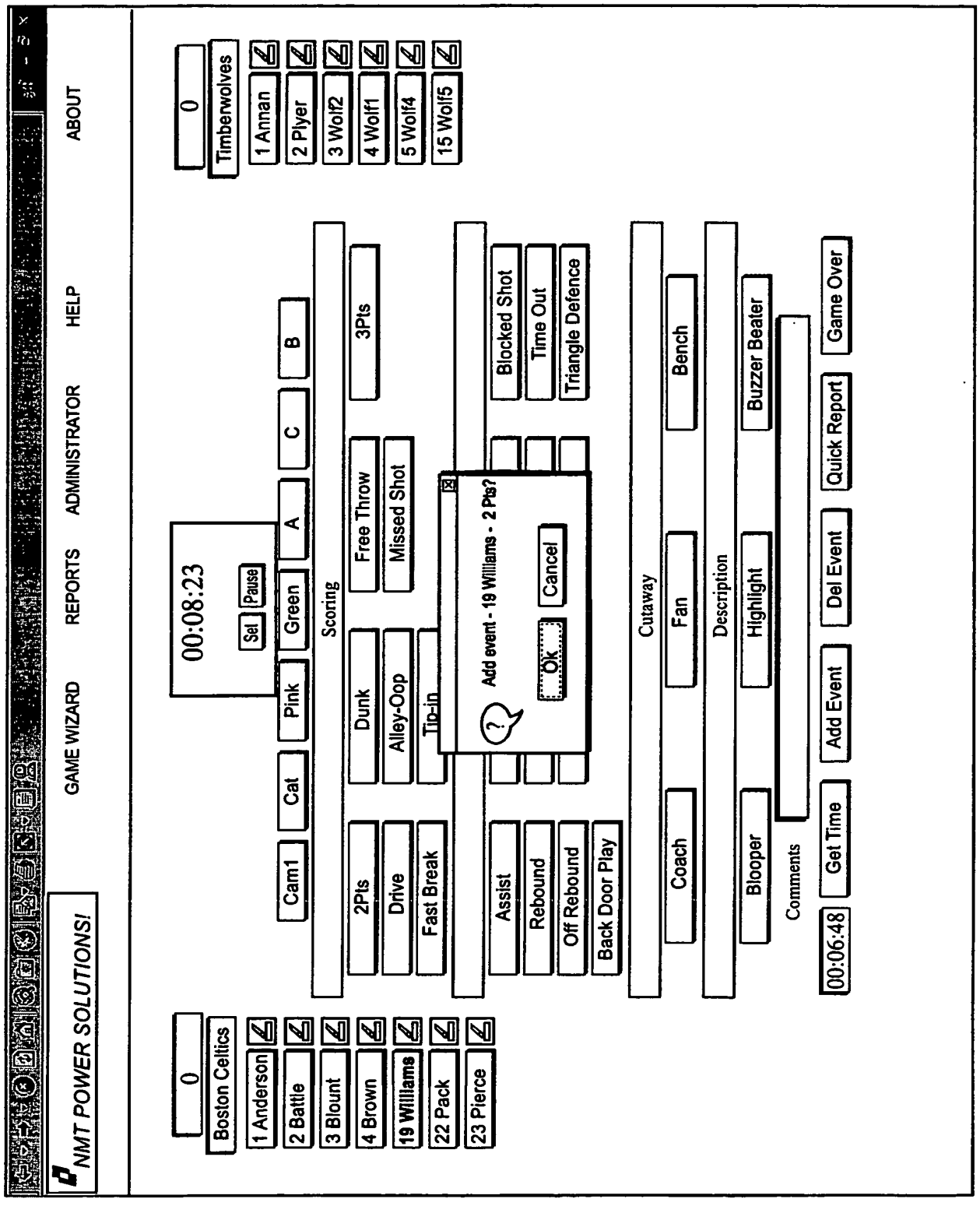
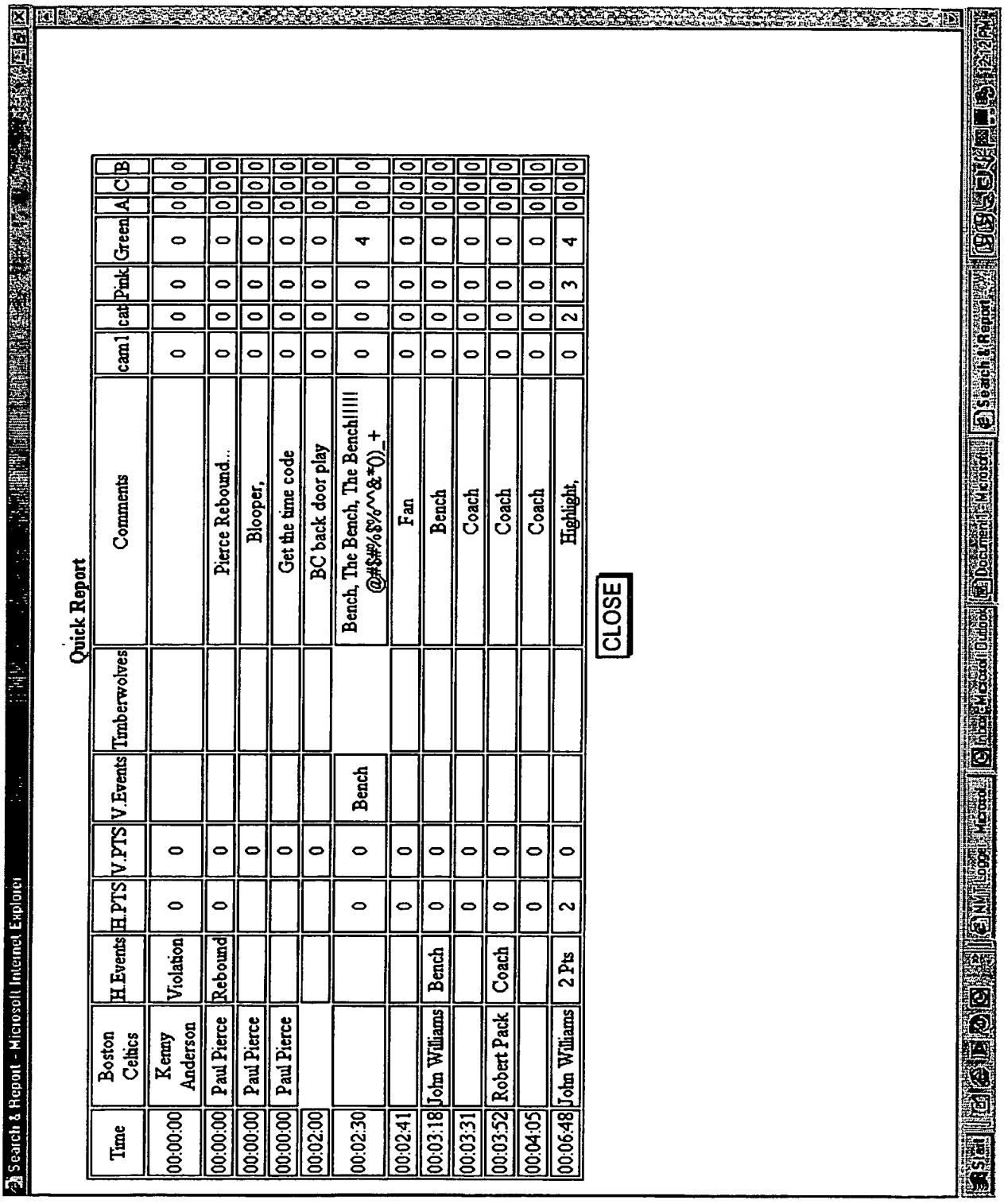

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
0
Boston Celtics
1 Anderson
2 Battle
3 Blount
4 Brown
19 Williams
22 Pack
23 Pierce
00:08:23
Sel
Pause
Cam1
Cat
Pink
Green
A
C
B
Scoring
2Pts
Drive
Fast Break
Dunk
Alley-Oop
Tip-in
Free Throw
Missed Shot
3Pts
Add event - 19 Williams - 2 Pts?
Ok
Cancel
Assist
Rebound
Off Rebound
Back Door Play
Blocked Shot
Time Out
Triangle Defence
Cutaway
Coach
Fan
Bench
Description
Blooper
Highlight
Buzzer Beater
Comments
00:06:48
Get Time
Add Event
Del Event
Quick Report
Game Over
0
Timberwolves
1 Annan
2 Plyer
3 Wolf2
4 Wolf1
5 Wolf4
15 Wolf5

Fig.27



Time	Boston Celtics	H.Events	H.PTS	V.PTS	V.Events	Timberwolves	Comments	cam1	cat	Pink	Green	A	C	B
00:00:00	Kenny Anderson	Violation	0	0				0	0	0	0	0	0	0
00:00:00	Paul Pierce	Rebound	0	0			Pierce Rebound...	0	0	0	0	0	0	0
00:00:00	Paul Pierce			0			Blooper,	0	0	0	0	0	0	0
00:00:00	Paul Pierce			0			Get the time code	0	0	0	0	0	0	0
00:02:00				0			BC back door play	0	0	0	0	0	0	0
00:02:30			0	0	Bench		Bench, The Bench, The Bench!!!!!! @#$&%$%^^&*()_+	0	0	0	4	0	0	0
00:02:41			0	0			Fan	0	0	0	0	0	0	0
00:03:18	John Williams	Bench	0	0			Bench	0	0	0	0	0	0	0
00:03:31			0	0			Coach	0	0	0	0	0	0	0
00:03:52	Robert Pack	Coach	0	0			Coach	0	0	0	0	0	0	0
00:04:05			0	0			Coach	0	0	0	0	0	0	0
00:06:48	John Williams	2 Pts	2	0			Highlight,	0	2	3	4	0	0	0

Fig.28

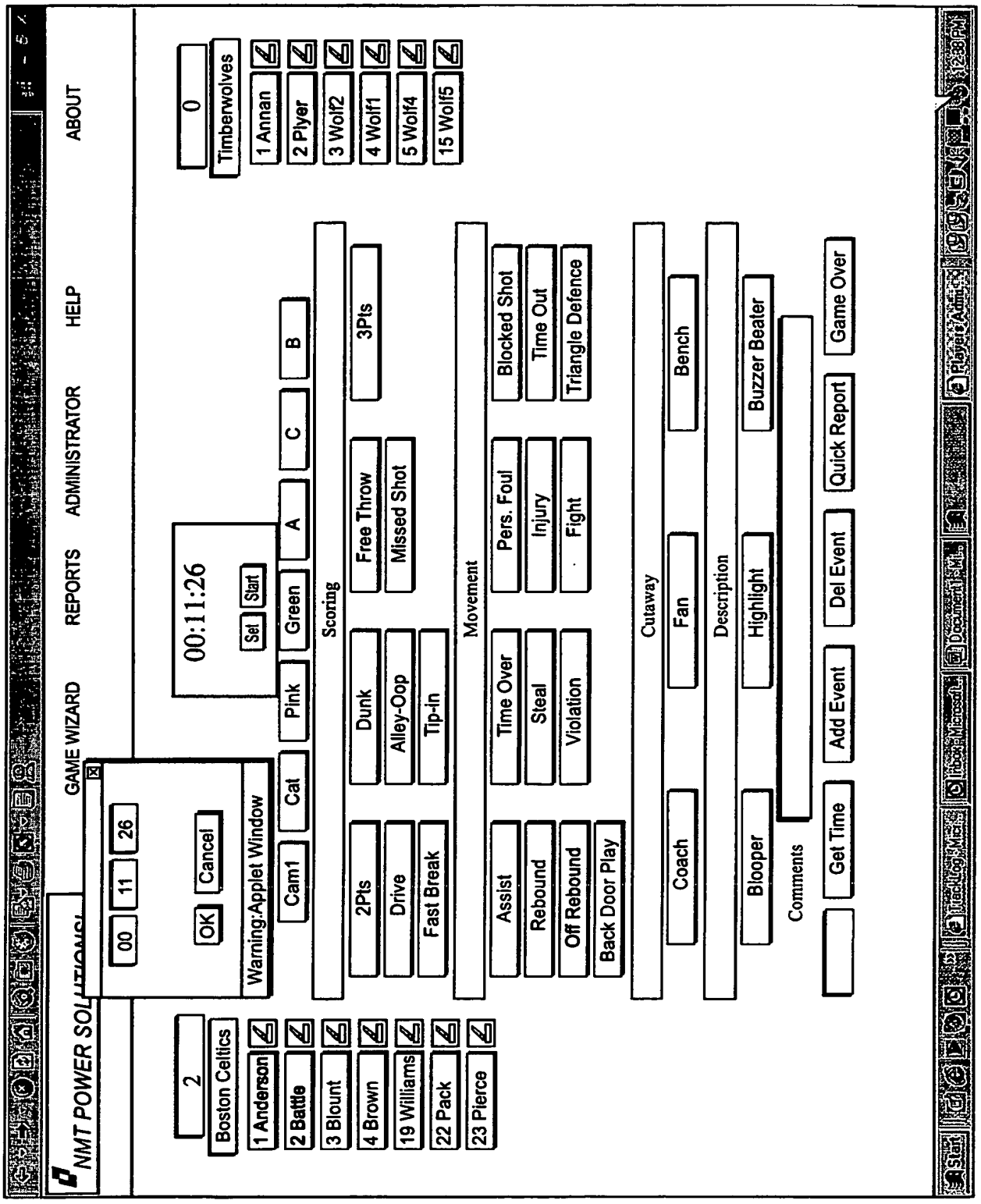

NMT POWER SOL
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
00:11:26
Set
Start
Warning:Applet Window
OK
Cancel
00
11
26
Cam1
Cat
Pink
Green
A
B
C
Scoring
2Pts
Drive
Fast Break
Dunk
Alley-Oop
Tip-in
Free Throw
Missed Shot
3Pts
Movement
Assist
Rebound
Off Rebound
Back Door Play
Time Over
Steal
Violation
Pers. Foul
Injury
Fight
Blocked Shot
Time Out
Triangle Defence
Cutaway
Coach
Fan
Bench
Description
Blooper
Highlight
Buzzer Beater
Comments
Get Time
Add Event
Del Event
Quick Report
Game Over
2
Boston Celtics
1 Anderson
2 Battle
3 Blount
4 Brown
19 Williams
22 Pack
23 Pierce
0
Timberwolves
1 Annan
2 Plyer
3 Wolf2
4 Wolf1
5 Wolf4
15 Wolf5

Fig.29

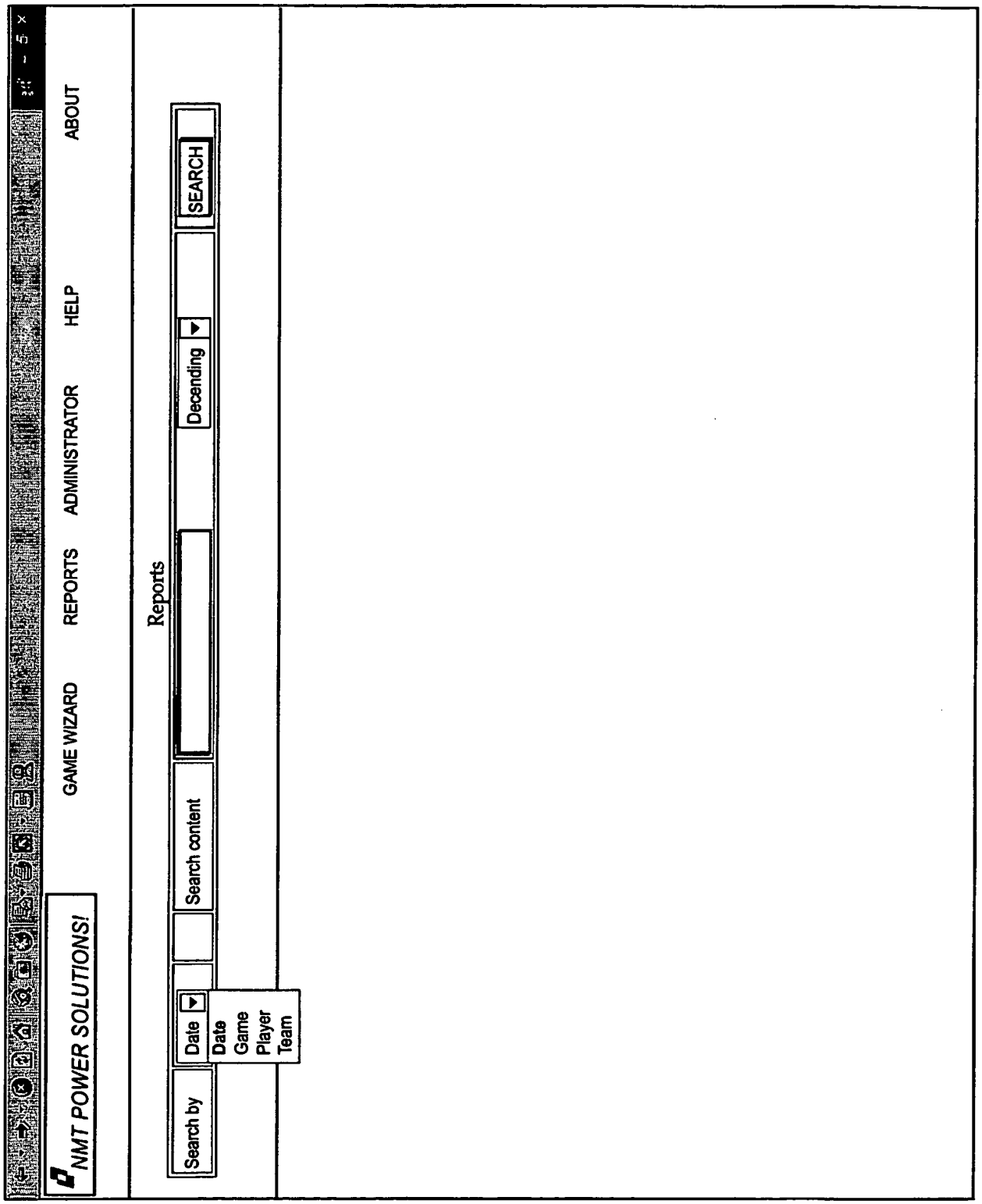

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Reports
Search by
Date
Date
Game
Player
Team
Search content
Decending
SEARCH

Fig.30

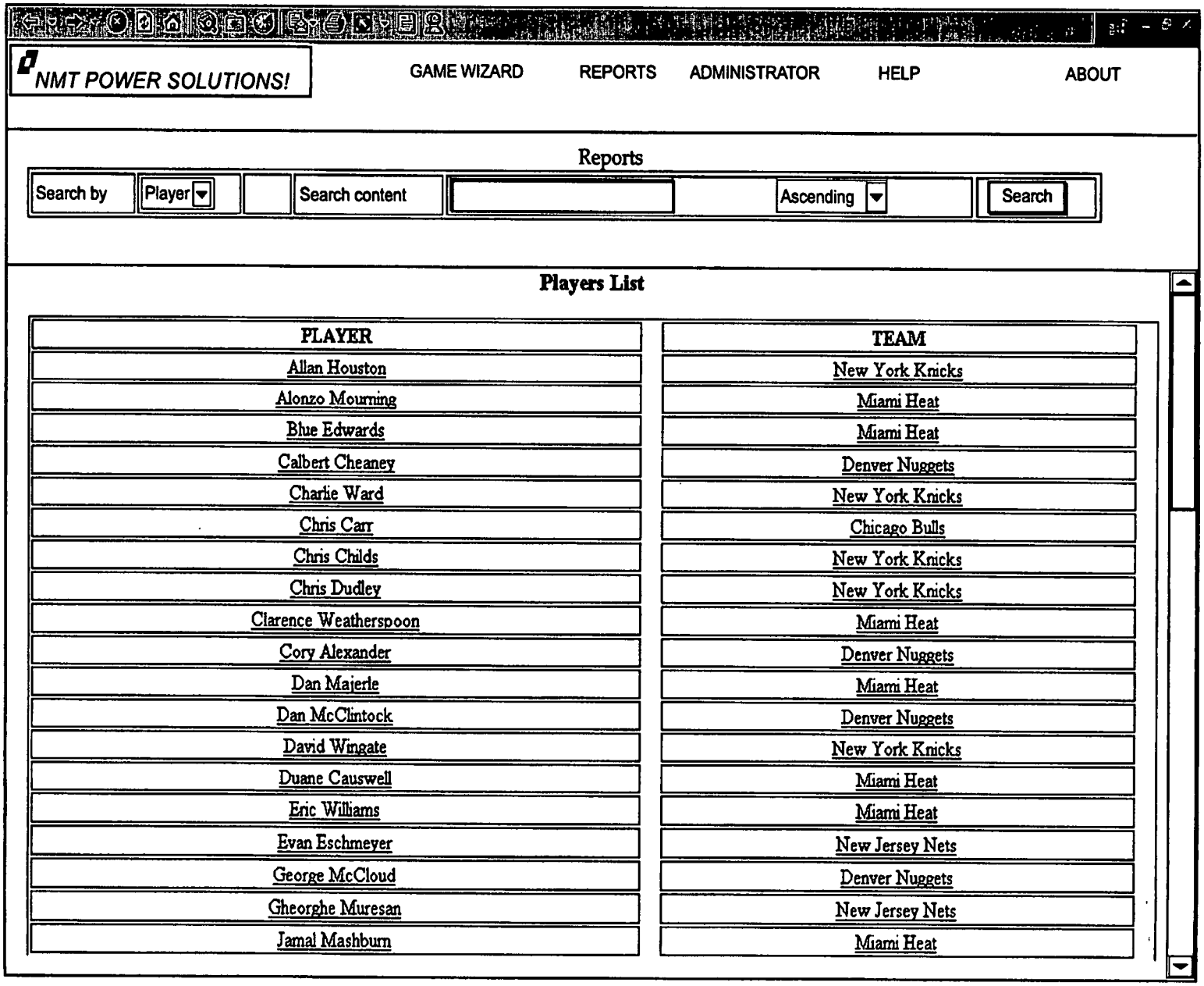


Fig.31

SUBSTITUTE SHEET (RULE 26)

WO 01/41000

PCT/US00/32491

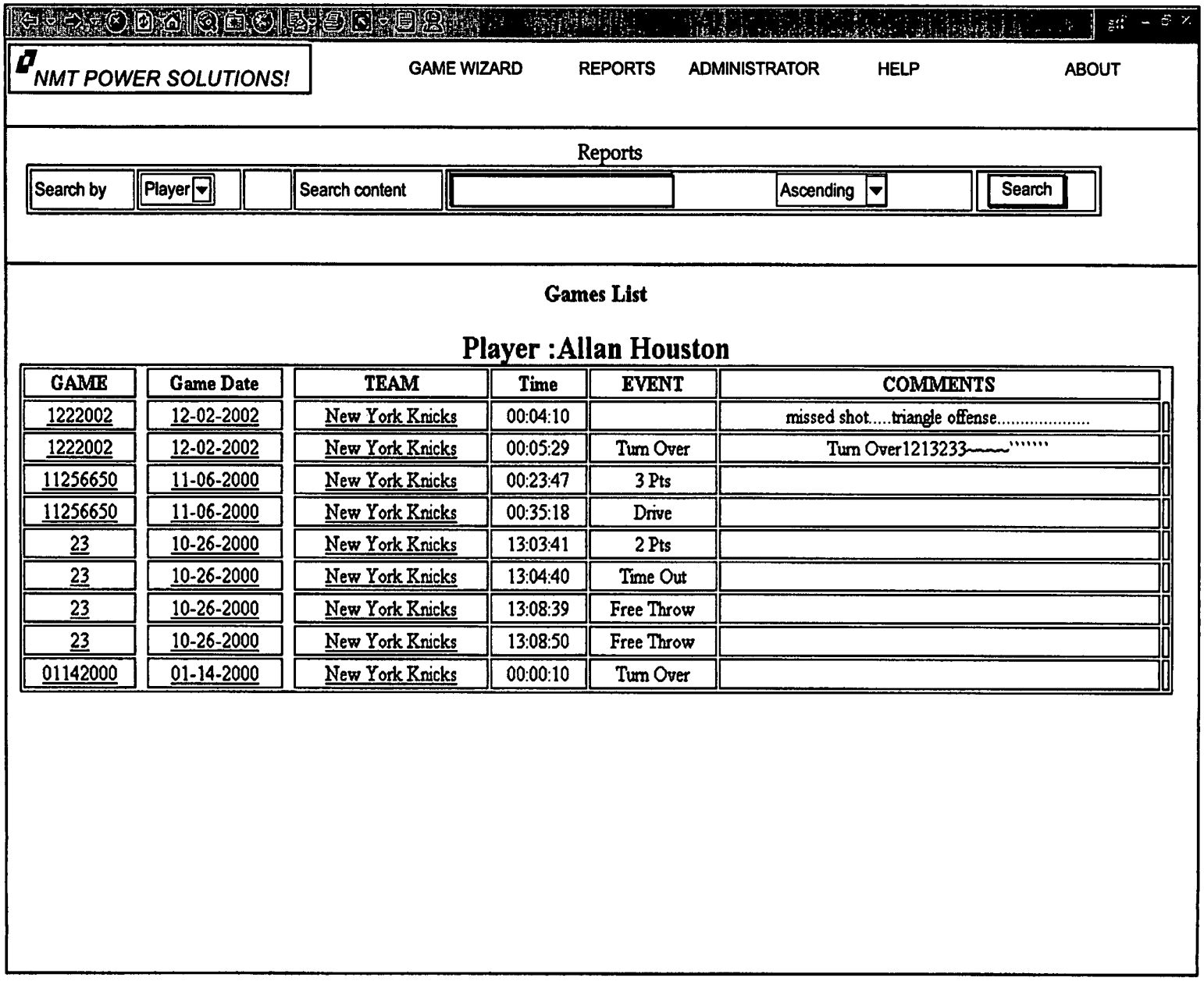


Fig.32

SUBSTITUTE SHEET (RULE 26)

WO 01/41000

PCT/US00/32491

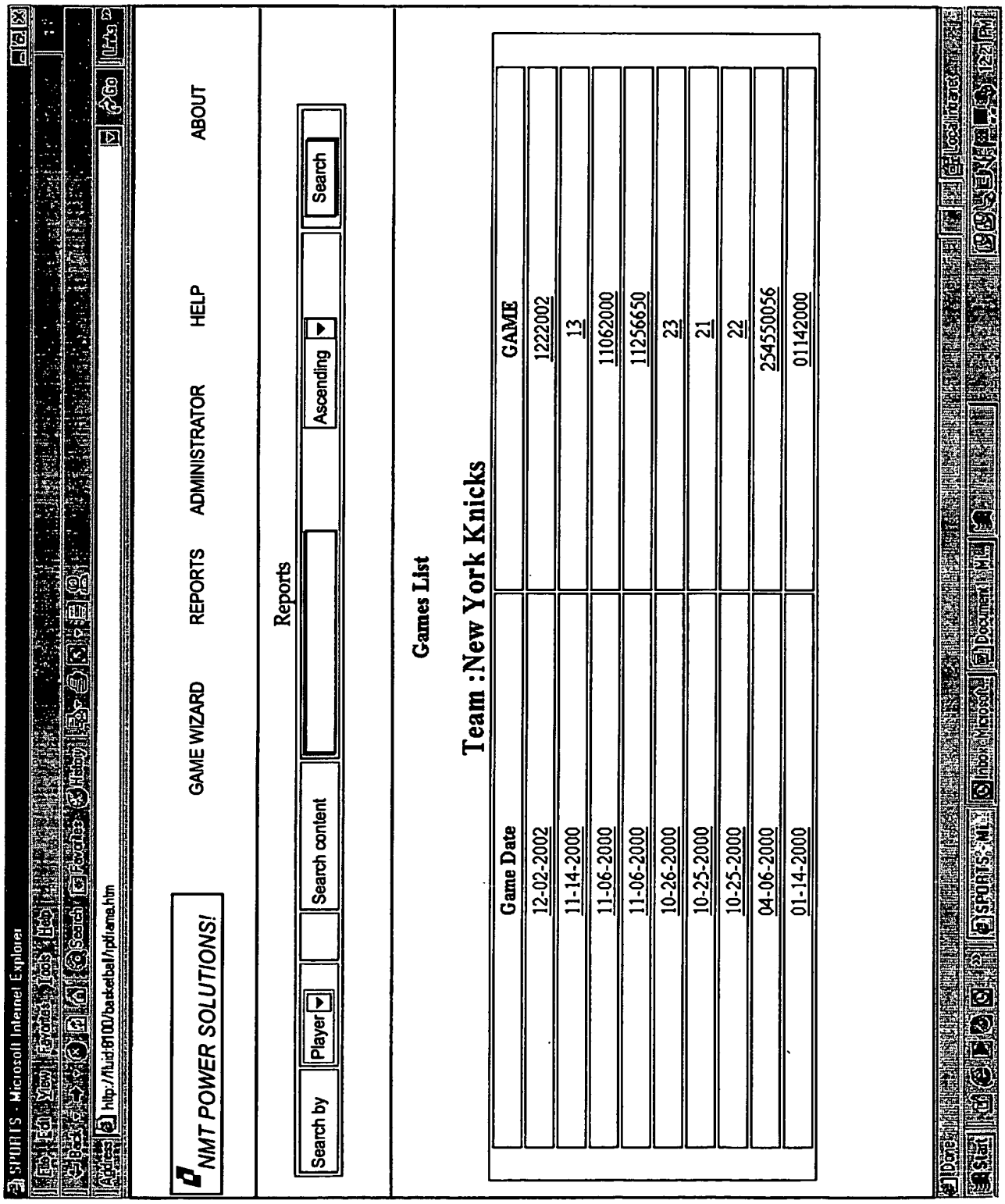

SPORTS - Microsoft Internet Explorer
http://fluid:8100/basketball/npfiama.htm
NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Reports
Search by
Player
Search content
Ascending
Search
Games List
Team :New York Knicks
Game Date
GAME
12-02-2002
1222002
11-14-2000
13
11-06-2000
11062000
11-06-2000
11256650
10-26-2000
23
10-25-2000
21
10-25-2000
22
04-06-2000
254550056
01-14-2000
01142000

Fig.33

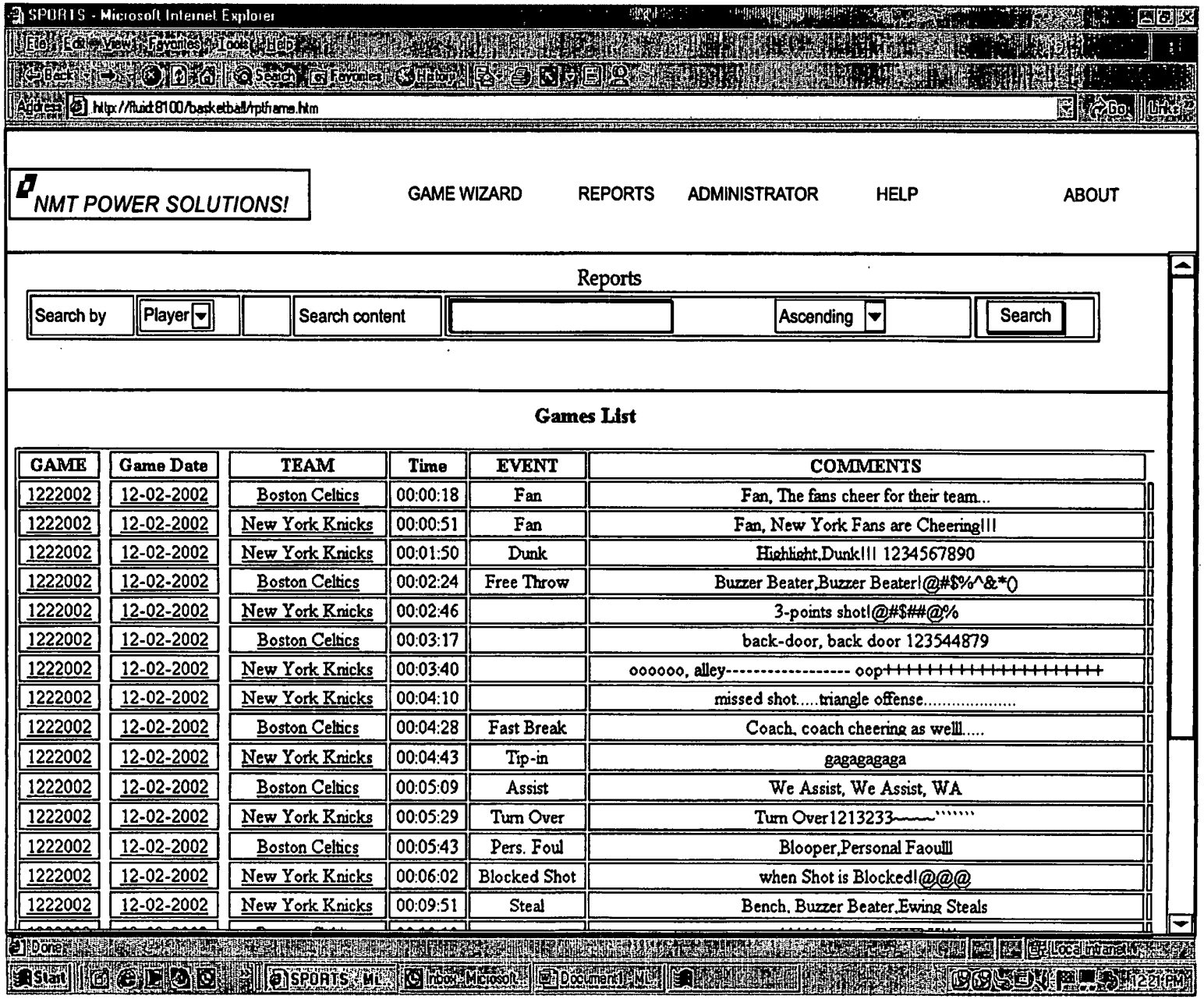
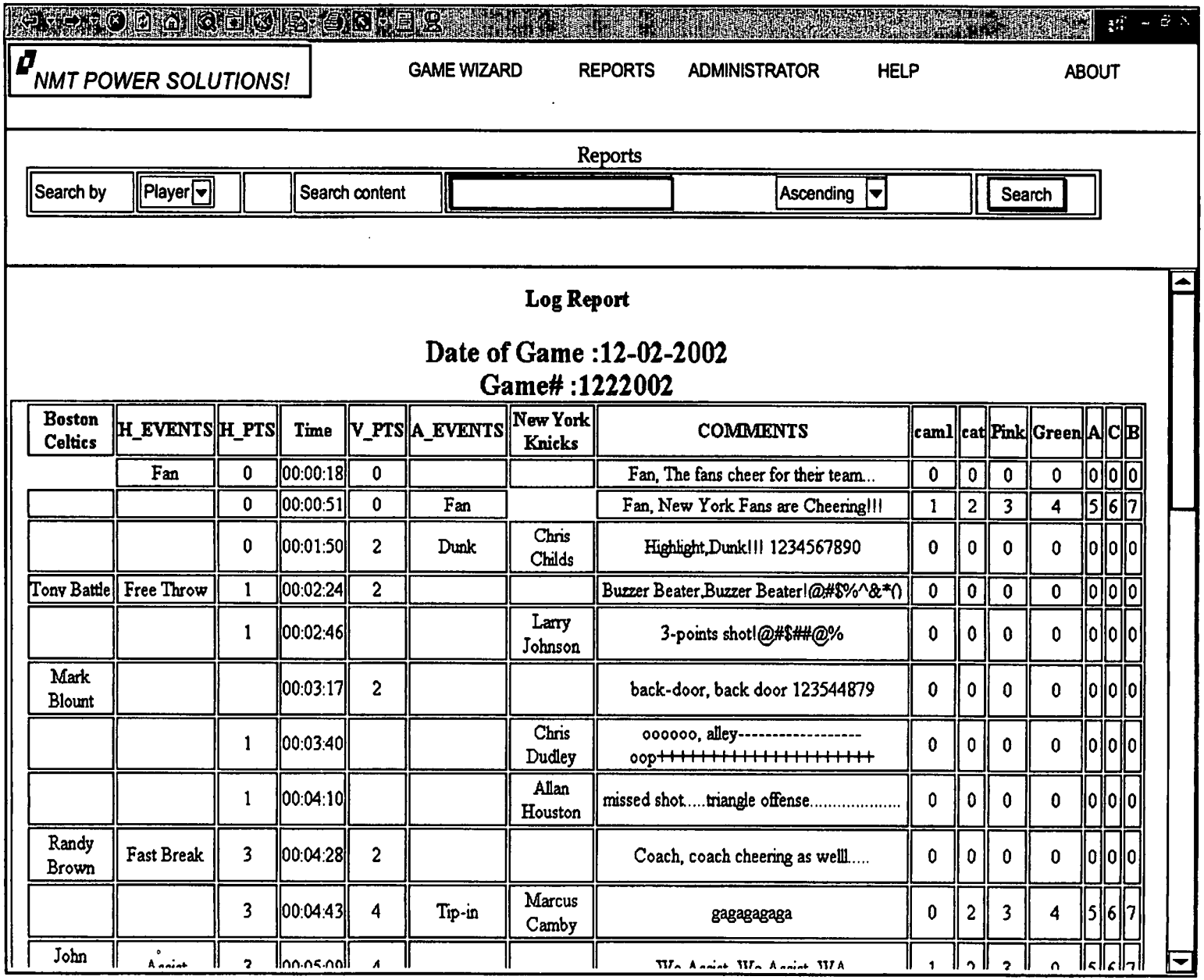


Fig.34

SUBSTITUTE SHEET (RULE 26)



Log Report

Date of Game :12-02-2002
Game# :1222002

Boston Celtics	H_EVENTS	H_PTS	Time	V_PTS	A_EVENTS	New York Knicks	COMMENTS	caml	cat	Pink	Green	A	C	B
	Fan	0	00:00:18	0			Fan, The fans cheer for their team...	0	0	0	0	0	0	0
		0	00:00:51	0	Fan		Fan, New York Fans are Cheering!!!	1	2	3	4	5	6	7
		0	00:01:50	2	Dunk	Chris Childs	Highlight,Dunk!!! 1234567890	0	0	0	0	0	0	0
Tony Battle	Free Throw	1	00:02:24	2			Buzzer Beater,Buzzer Beater!@#$%^&*()	0	0	0	0	0	0	0
		1	00:02:46			Larry Johnson	3-points shot!@#$##@%	0	0	0	0	0	0	0
Mark Blount			00:03:17	2			back-door, back door 123544879	0	0	0	0	0	0	0
		1	00:03:40			Chris Dudley	oooooo, alley---------- oop++++++++++++++++++++	0	0	0	0	0	0	0
		1	00:04:10			Allan Houston	missed shot.....triangle offense.....	0	0	0	0	0	0	0
Randy Brown	Fast Break	3	00:04:28	2			Coach, coach cheering as welll.....	0	0	0	0	0	0	0
		3	00:04:43	4	Tip-in	Marcus Camby	gagagagaga	0	2	3	4	5	6	7
John	Assist	3	00:05:09	4			We Assist We Assist WA	1	2	3	0	5	6	7

Fig.35

SUBSTITUTE SHEET (RULE 26)
WO 01/41000
39/50
PCT/US00/32491

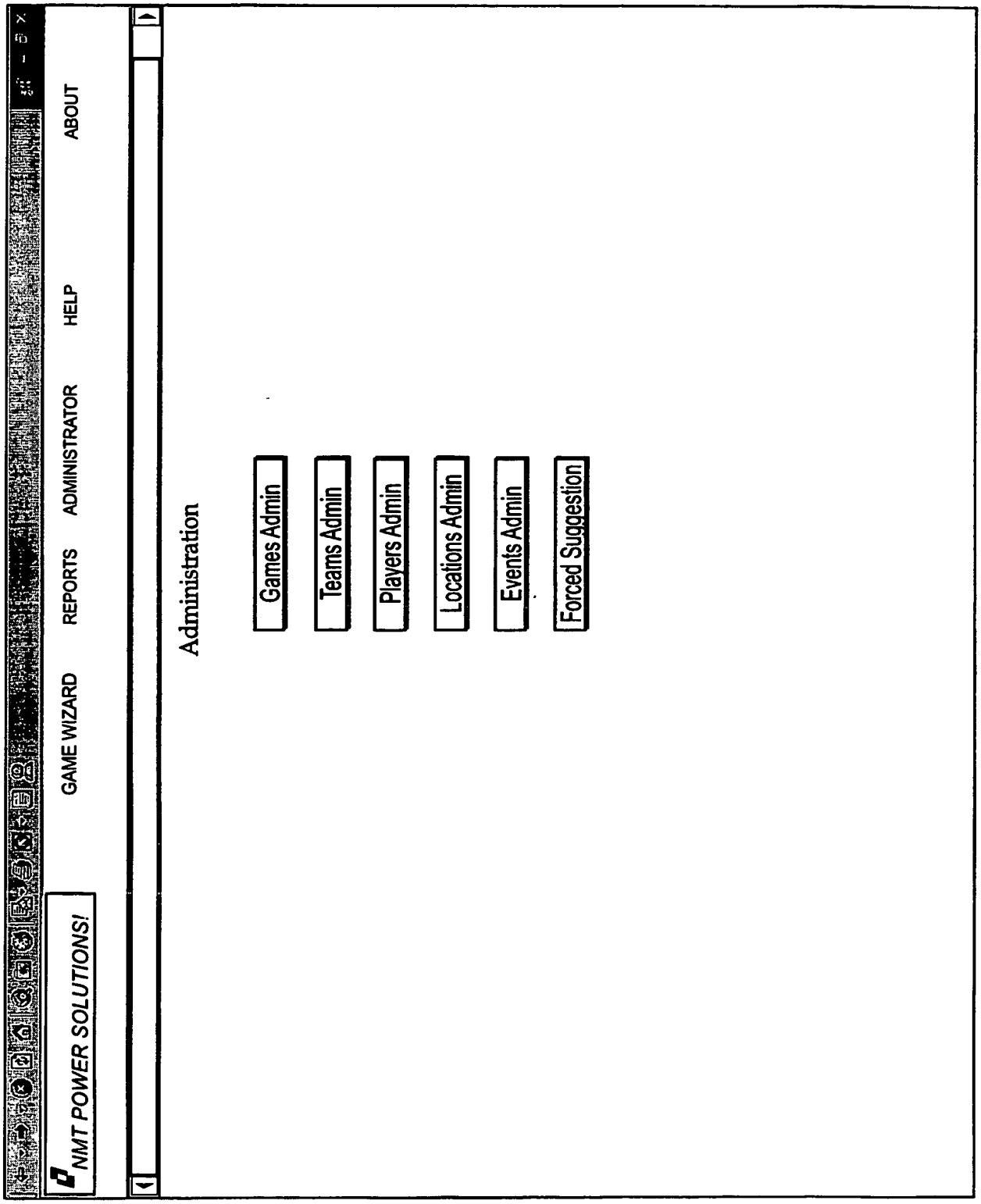

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Events Admin
Forced Suggestion

Fig.36

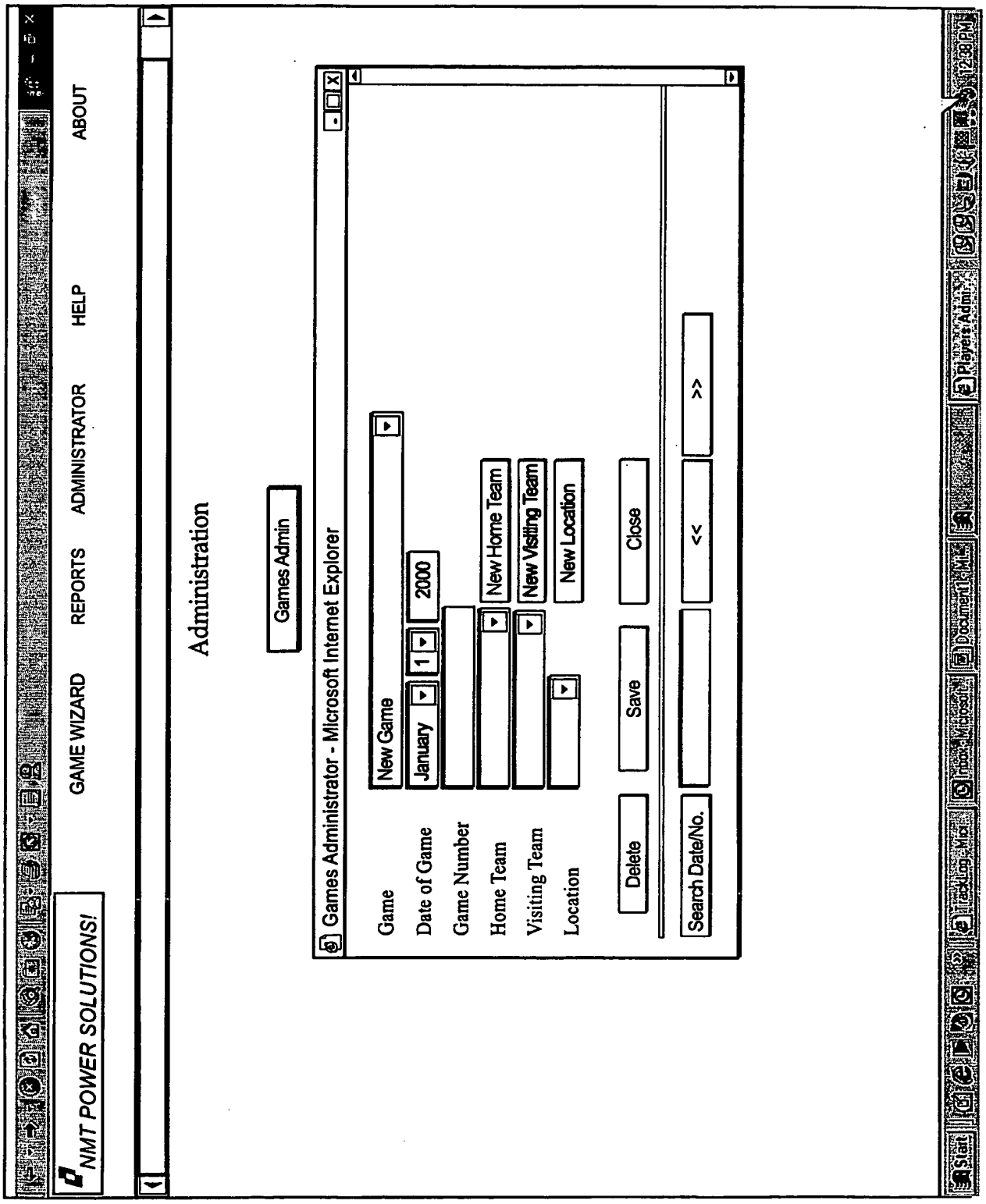

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Games Administrator - Microsoft Internet Explorer
Game
Date of Game
Game Number
Home Team
Visiting Team
Location
New Game
January
1
2000
New Home Team
New Visiting Team
New Location
Delete
Save
Close
Search Date/No.
<<
>>

Fig.37

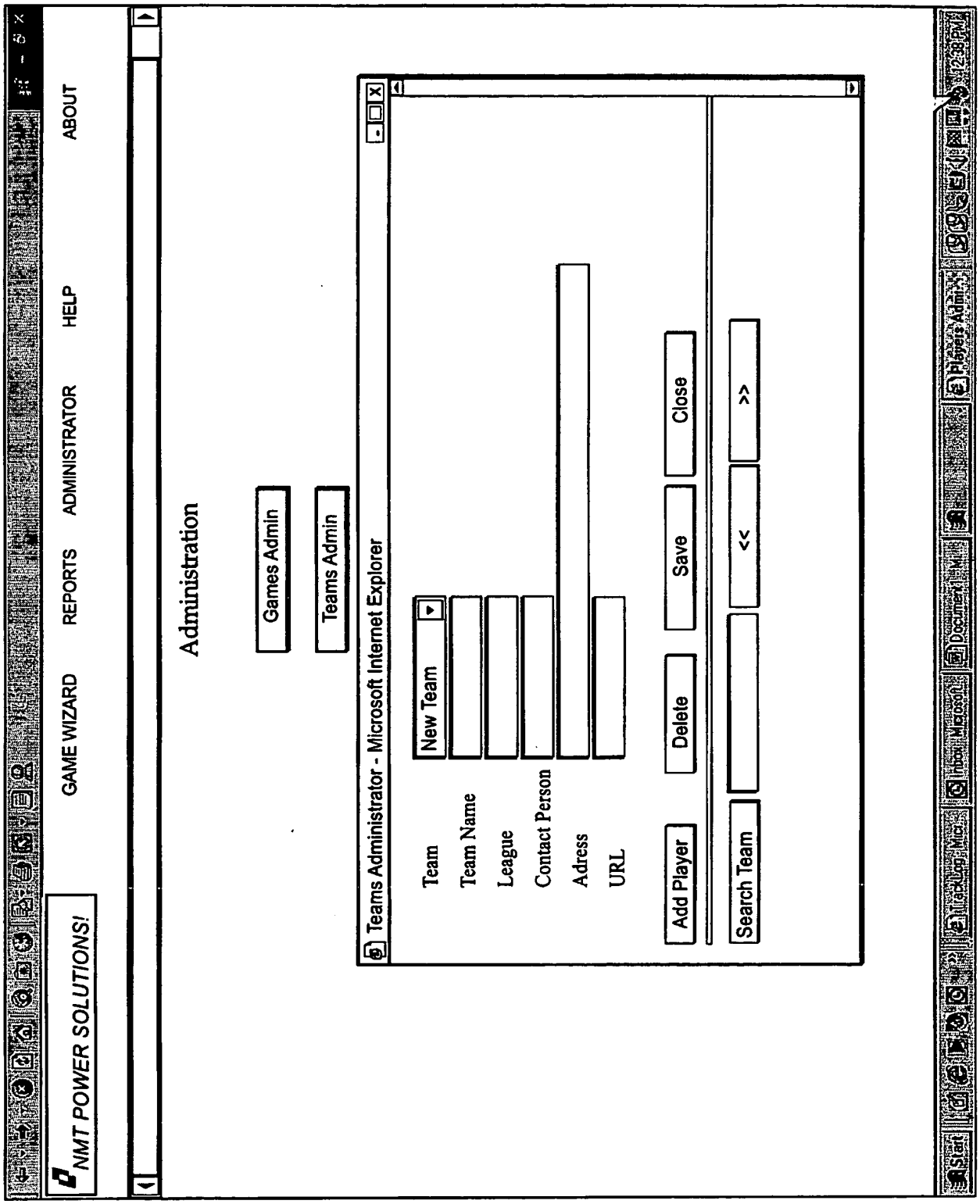

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Teams Administrator - Microsoft Internet Explorer
Team
Team Name
League
Contact Person
Adress
URL
New Team
Add Player
Delete
Save
Close
Search Team
<<
>>

Fig.38

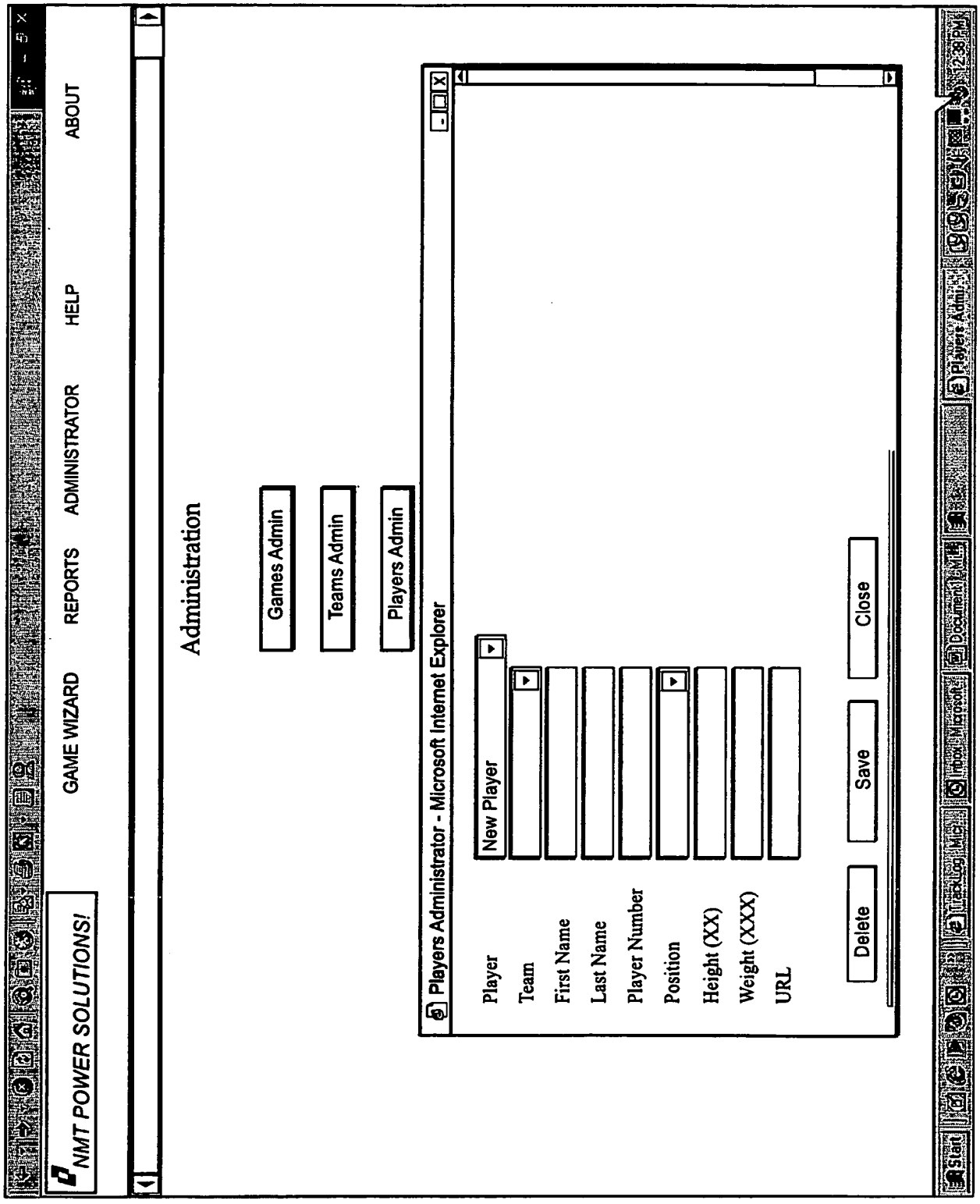

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Players Administrator - Microsoft Internet Explorer
Player
New Player
Team
First Name
Last Name
Player Number
Position
Height (XX)
Weight (XXX)
URL
Delete
Save
Close

Fig.39

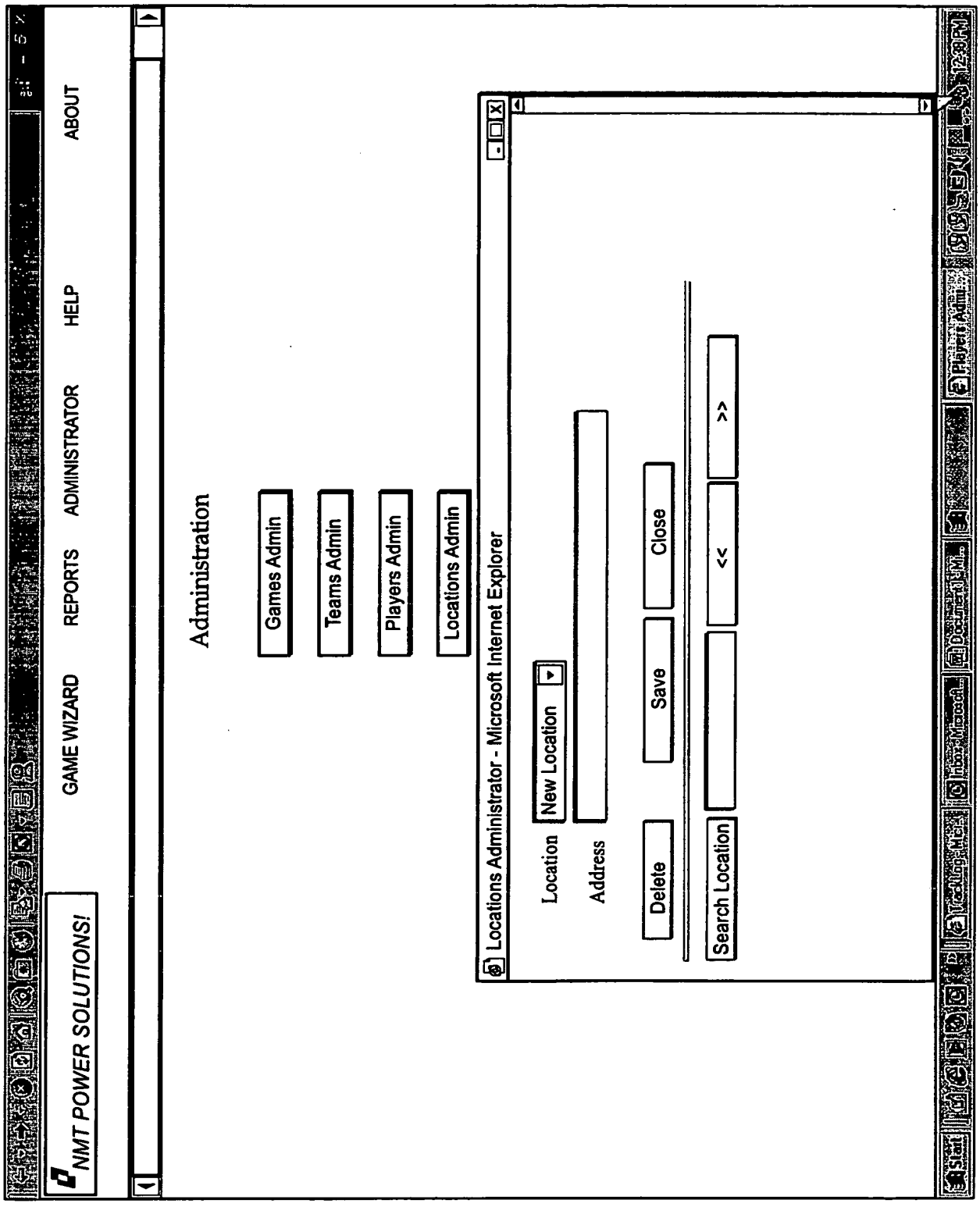

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Locations Administrator - Microsoft Internet Explorer
Location
New Location
Address
Delete
Save
Close
Search Location
<<
>>

Fig.40

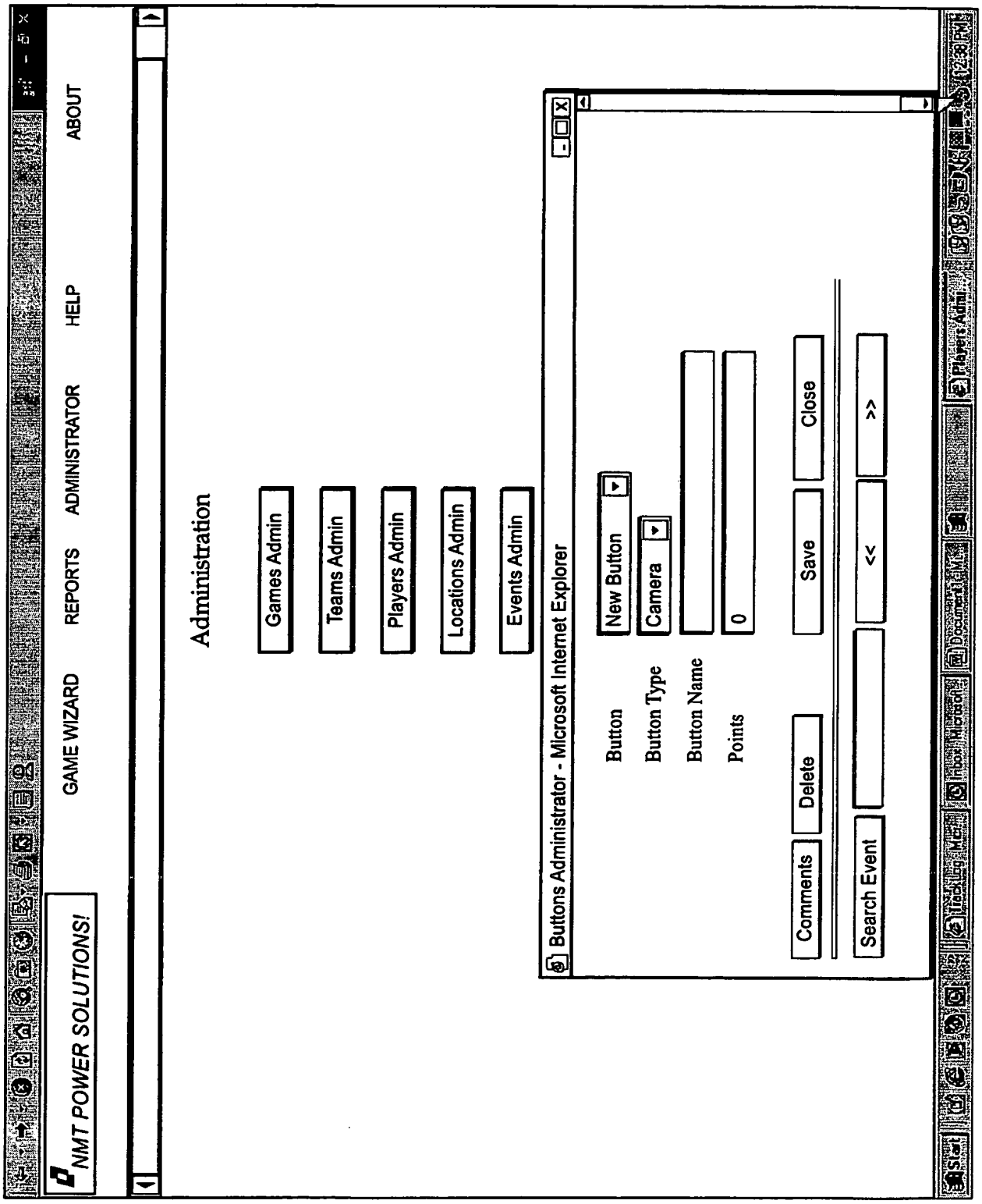

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Events Admin
Buttons Administrator - Microsoft Internet Explorer
Button
New Button
Button Type
Camera
Button Name
Points
0
Comments
Delete
Save
Close
Search Event
<<
>>
Start
Players Admi

Fig.41

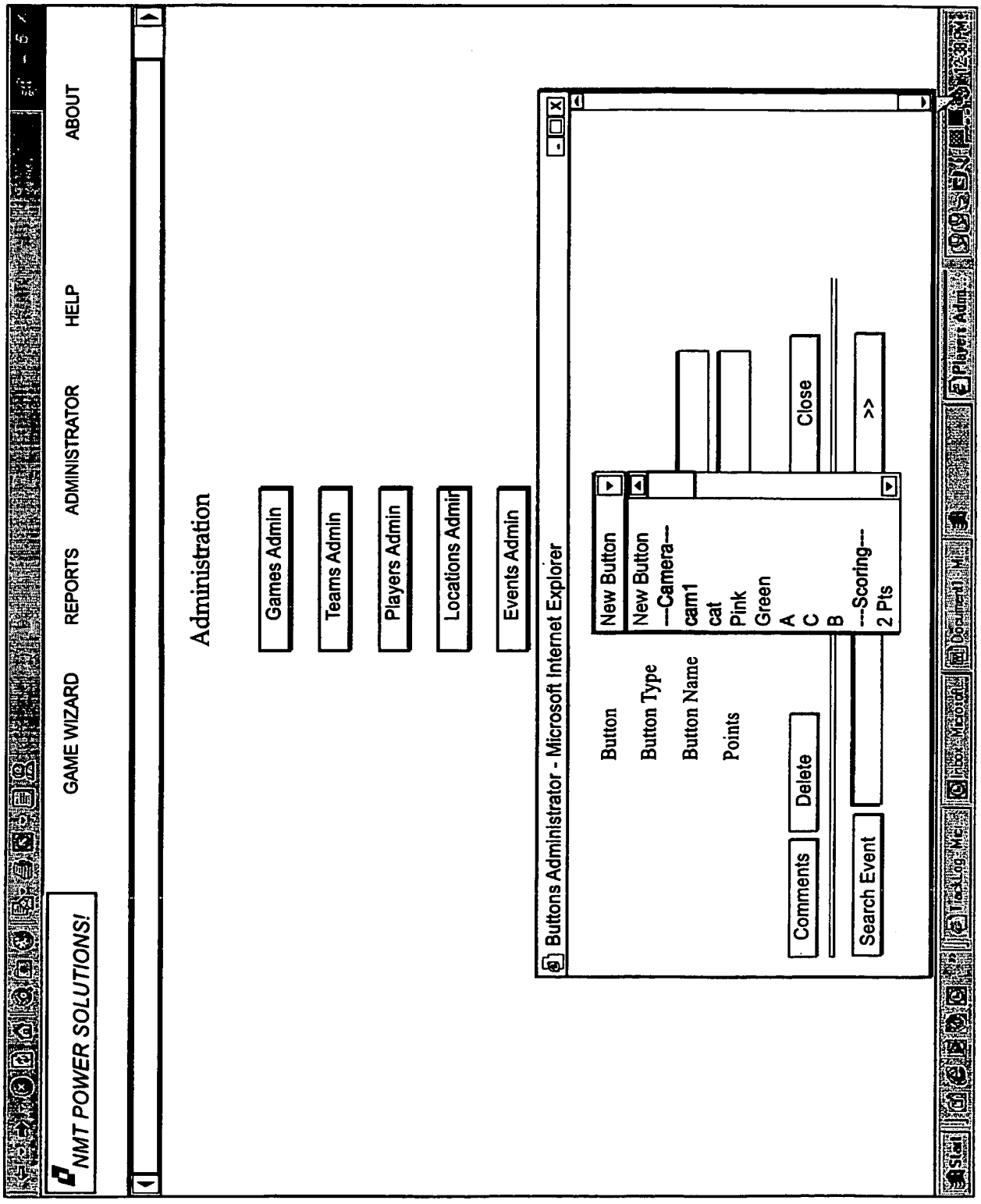

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Events Admin
Buttons Administrator - Microsoft Internet Explorer
Button
Button Type
Button Name
Points
New Button
New Button
---Camera---
cam1
cat
Pink
Green
A
C
B
---Scoring---
2 Pts
Close
>>
Comments
Delete
Search Event

Fig.42

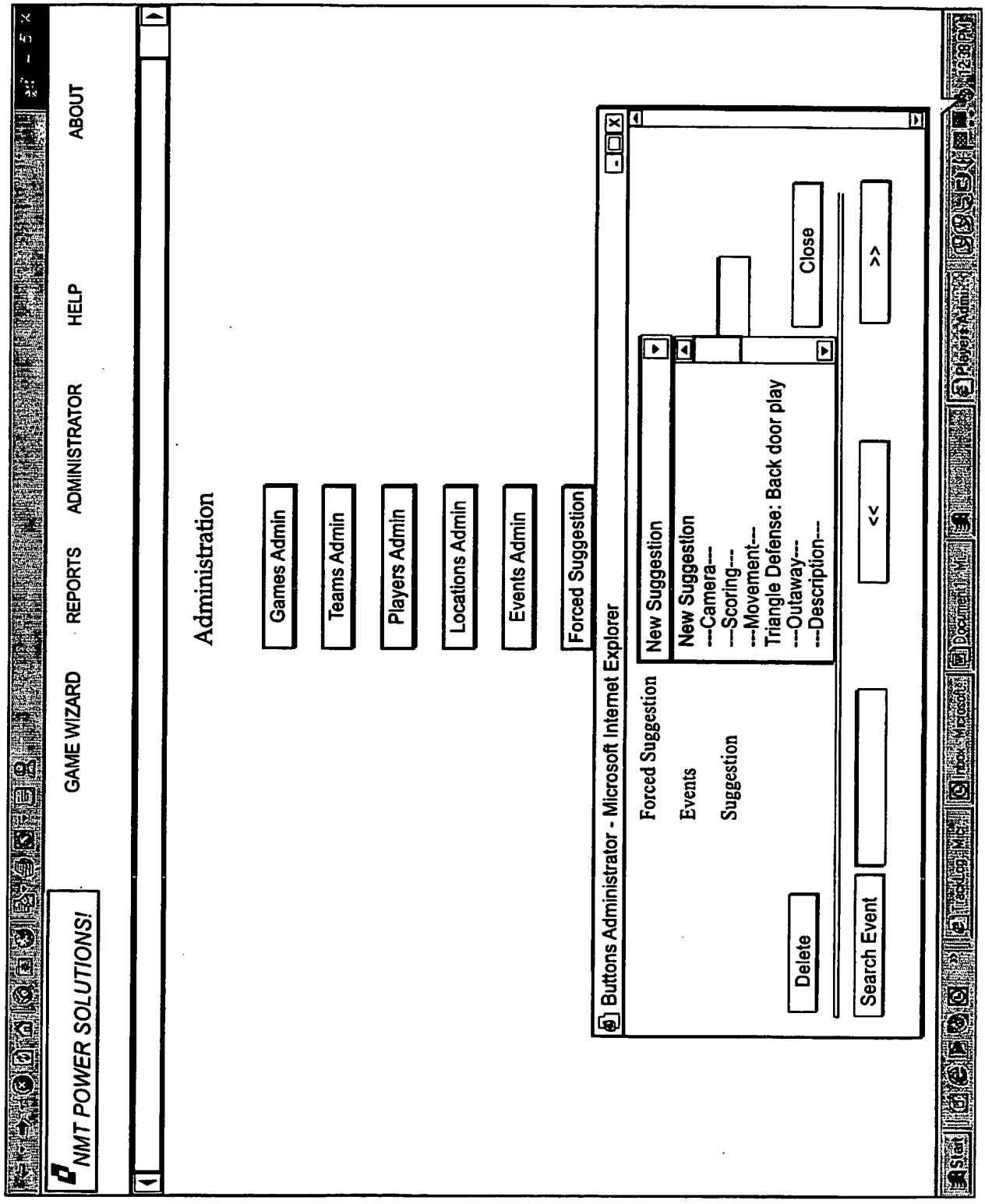

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Events Admin
Forced Suggestion
Buttons Administrator - Microsoft Internet Explorer
Forced Suggestion
Events
Suggestion
New Suggestion
New Suggestion
---Camera---
---Scoring---
---Movement---
Triangle Defense: Back door play
---Outaway---
---Description---
Close
>>
<<
Delete
Search Event

Fig.43

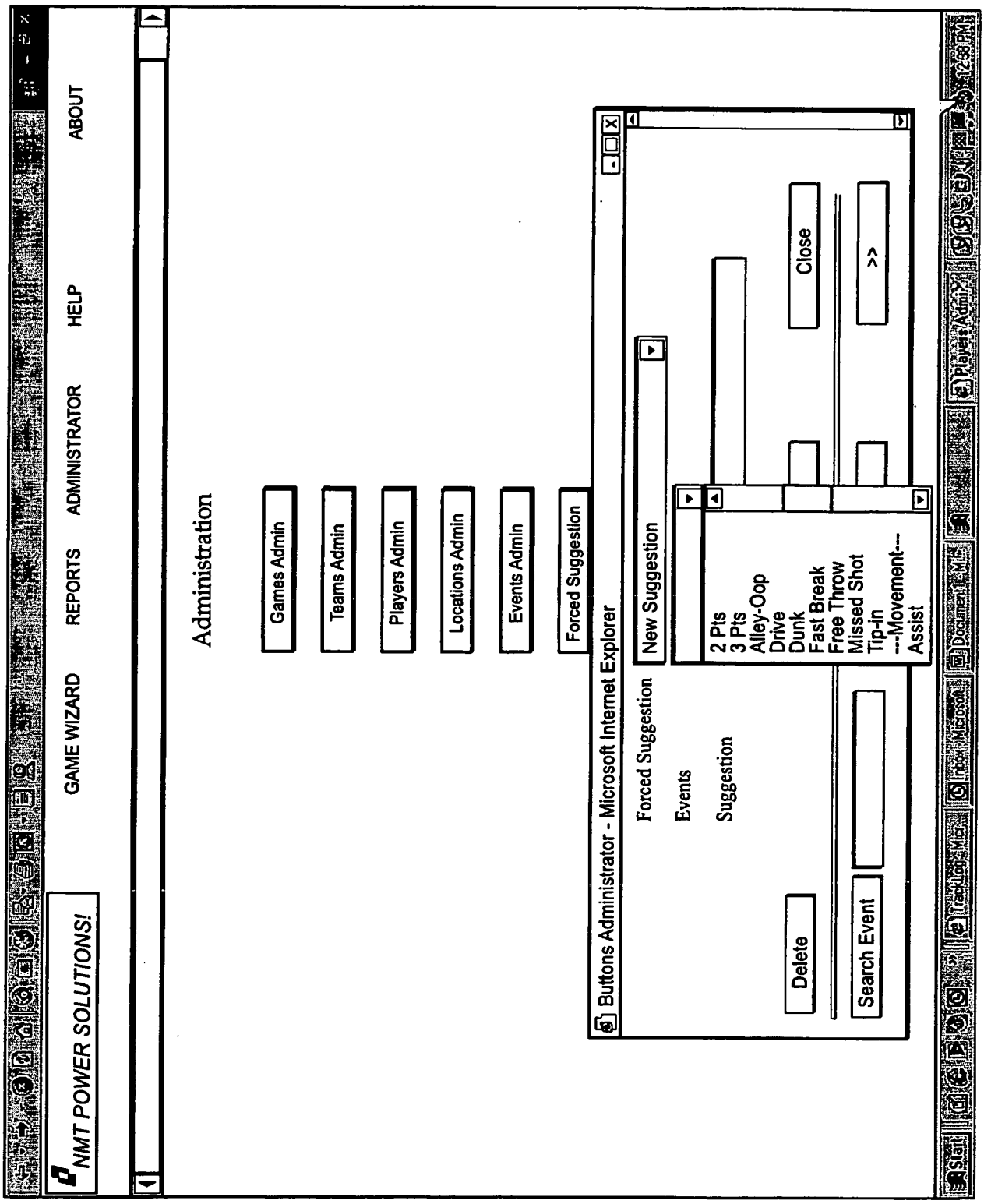

NMT POWER SOLUTIONS!
GAME WIZARD
REPORTS
ADMINISTRATOR
HELP
ABOUT
Administration
Games Admin
Teams Admin
Players Admin
Locations Admin
Events Admin
Forced Suggestion
Buttons Administrator - Microsoft Internet Explorer
Forced Suggestion
Events
Suggestion
New Suggestion
2 Pts
3 Pts
Alley-Oop
Drive
Dunk
Fast Break
Free Throw
Missed Shot
Tip-in
---Movement--
Assist
Close
>>
Delete
Search Event
Start
Player Admin

Fig.44

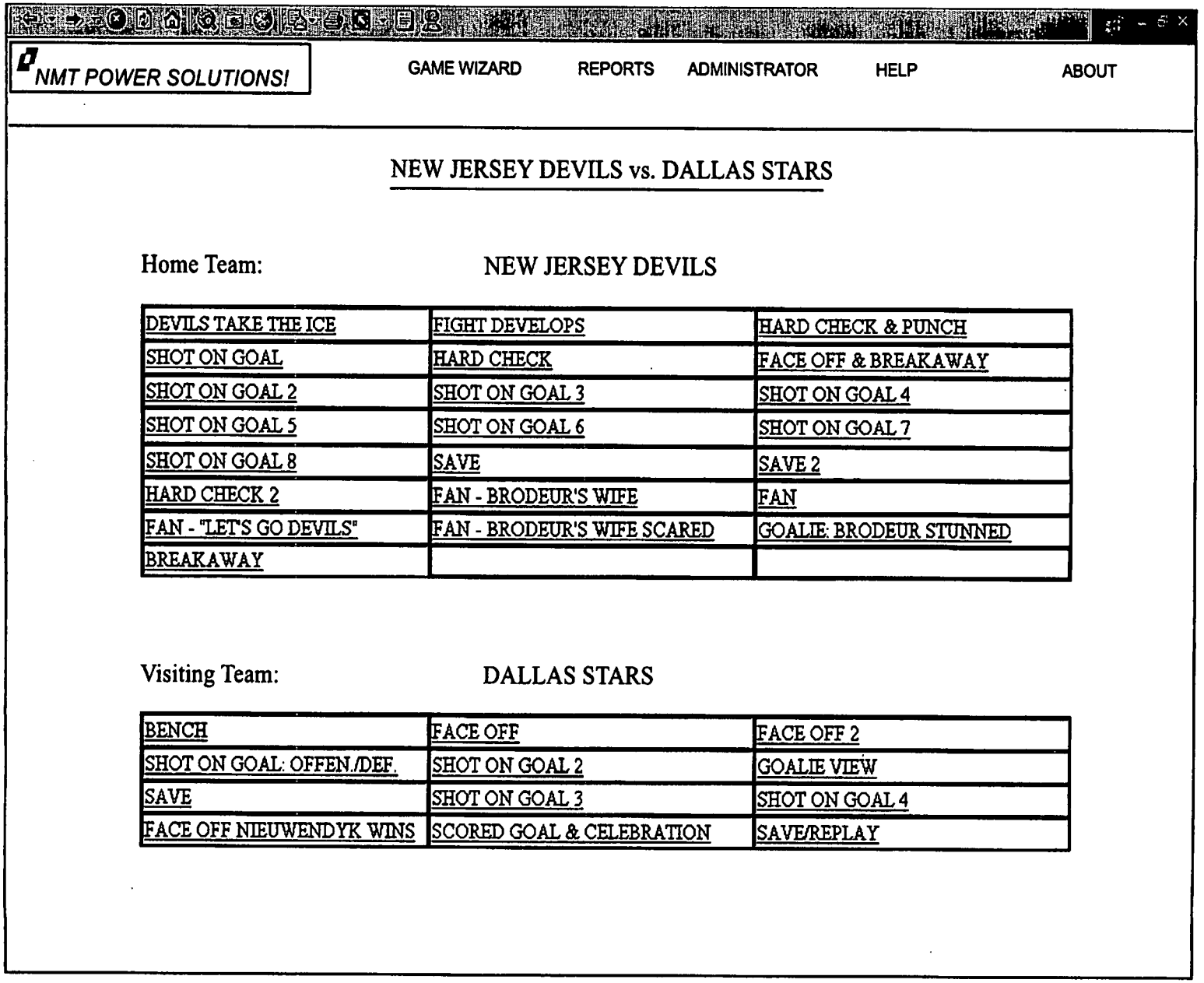


Fig.45

SUBSTITUTE SHEET (RULE 26)

WO 01/41000

PCT/US00/32491

09/806008

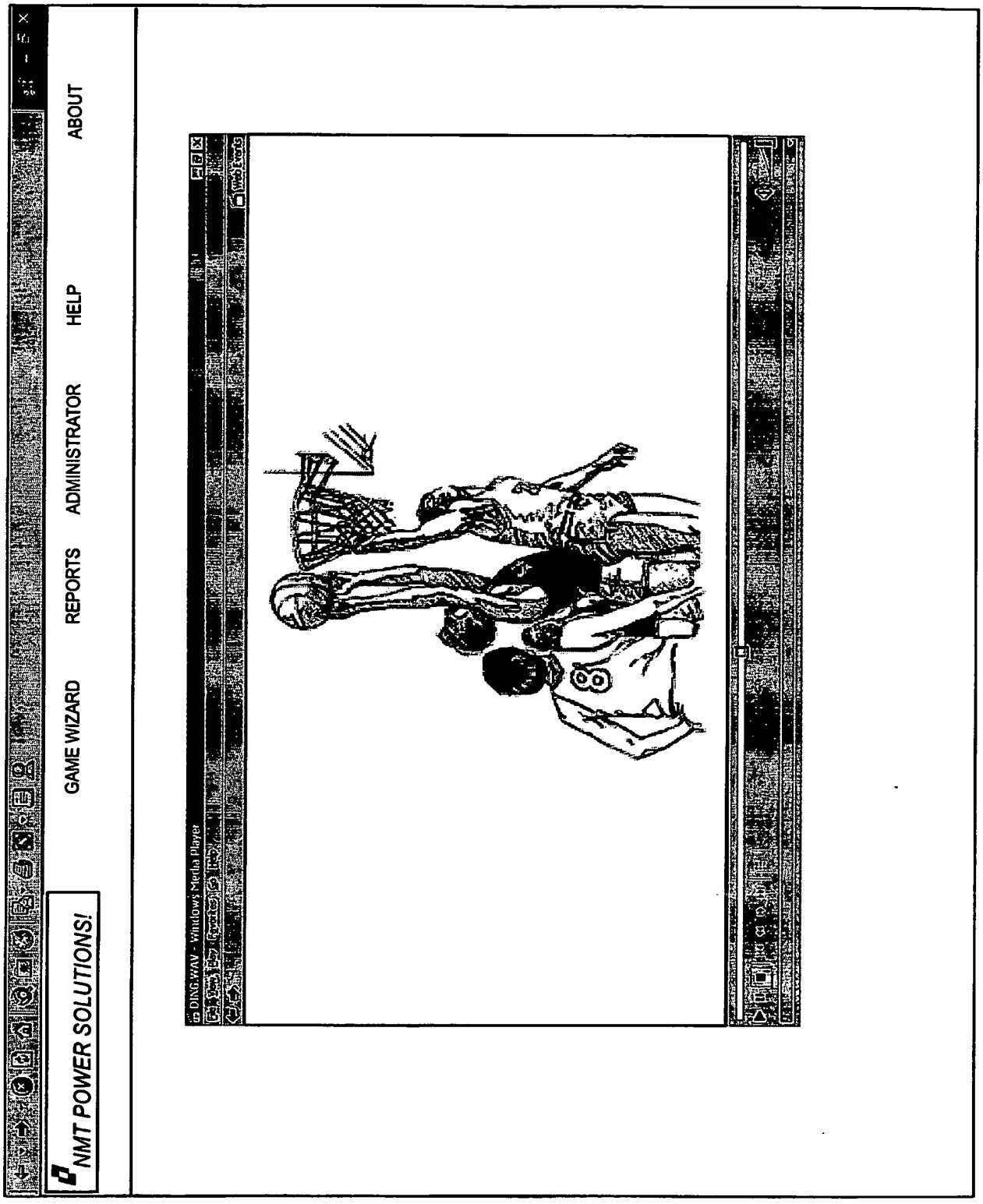


Fig.46